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EXCAVATION AND LINING COMPLETED. FLUME ALONG RIGHT BANK

DRAINAGE IMPROVEMENTS AT SYRACUSE

Designing and Constructing Intercepting Sewer—Choice of Section—Material Used—Inverted Siphons and Intercepting Valves—Cofferdam and Tunnel Construction—Flumes for Handling Water

THE preparatory surveys and other investigations made with a view to constructing an intercepting sewer in Syracuse, N. Y., and deepening and lining Onondaga creek have been described in a previous issue. The general plans for the sewer are as follows:

Onondaga Creek flows north and it was decided to locate the main intercepting sewer on the east or right bank of the creek. As there was a considerable section on the left bank also to be drained, it was necessary to connect this with the intercepting sewer at intervals by inverted siphons under the creek. Near the lower end it is planned to construct a short intercepting sewer on the west side, connecting by a siphon with the main interceptor; and similarly opposite the upper or southern end of the main interceptor is to be an interceptor on the west side similarly connected. It is proposed to carry the main interceptor to a sewage disposal plant on low, flat land north of the city on the shore of Lake Onondaga. For the present, however, the interceptor ends in an outlet chamber on the bank of the creek; this being so designed as to discharge the sewage into the creek; but to permit it to flow into the continuation of the interceptor whenever this shall be built. This will also permit the sewage to be diverted to the creek at any time when it may be desired to put the disposal plant out of service. It is also proposed to arrange at another point along the intercepting sewer a somewhat similar outlet chamber so that the sewage from the upper one-third of the interceptor may be discharged into the creek should it be desired to empty the middle third for cleaning or repair. The outlet chamber is fitted with flash boards sliding in steel channels fixed in the sides of each opening, the openings being of the same width so that the same flash boards can be used in either one (Fig. 3).

As the intercepting sewer is to receive the sewage from all the existing sewers, it was, of course, necessary that it should be located somewhat lower than these. The elevation of its outlet end was determined by that of the lake into which it is to discharge. Where the interceptor lies close to the creek

FIG. 2.—VIEW OF OUTLET CHAMBER FROM CREEK

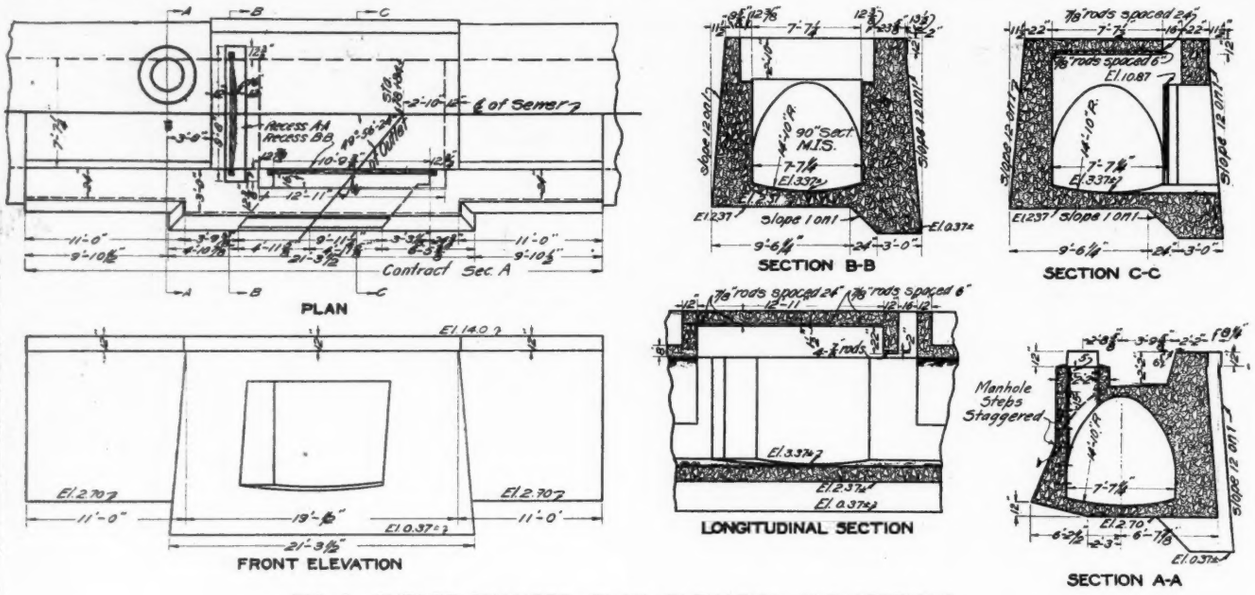


FIG. 3.—OUTLET CHAMBER, PLAN, ELEVATION AND SECTIONS

the sewage from the sewers above will discharge directly into it. Where, however, the intercepting sewer is quite a distance from the creek (as is the case over a considerable part of its length), since it is thought desirable to intercept all the house sewage from the old sewers, a connecting sewer is run from the intercepting sewer toward the creek, to a point sufficiently near the outlet of the old sewer to catch all of the house sewage. Fortunately, it was possible to obtain sufficient fall from the lower end of the old sewer to permit of this in every case but one. In this instance the connecting sewer was carried at the flattest practical grade, and where this grade intersected that of the old sewer a manhole was built and the two connected. This left unintercepted the house sewage from the point of intersection to the outlet of the old sewer, and to prevent this the connecting sewer was continued parallel with the old sewer, but above it, sufficiently far to receive the sewage from all occupied property. This connecting sewer has already been built as a separate contract, because it was intended to pave the street at once; and for the same reason house connections were carried from the connecting sewer to the curb parallel with and close to the connections already made with the old sewer. These new connections cannot yet be used, as the interceptor has not been completed, but as soon as this has been effected the new house connections will be connected up with that portion of the old house connections between the curb and the house.

Near the center of the town are two large sewers which lie so low as to determine the grade of the intercepting sewer. To make this grade as steep as possible the intercepting sewer at this point was made flat on top and the old sewers were rebuilt at this point, the concrete roof of the intercepting sewer serving also as the bottom of the reconstructed old sewer. Several feet were saved in this way.

The capacity of the sewer was made sufficient for a maximum rate of flow of 187½ gallons per day; or 125 gallons, one-half flowing off in eight hours. The population was taken as that estimated to be reached in about 60 years. The capacity of the sewer was made just double that obtained by using these estimates, with the idea that it should carry house sewage diluted with an equal volume of storm water, before the interceptor would reach its capacity; after which the surplus will flow into the creek through the present outlets.

Before deciding upon the cross section of the sewers several different types were considered; among these were the circular, egg-shaped, basket handle, horseshoe and various modifications of each. A modified horseshoe shape seemed to approach nearest to the ideal for the conditions existing and was adopted for the greater part of the work. The chief advantages of this type were considered to be a saving in excavation (that is, in width) over that required by most of the other types, and at the same time giving a minimum vertical diameter for a given carrying capacity. The vertical diameter of the design adopted was made equal to that of a circular sewer having the same capacity. This matter of width of sewer is an important item in deep trench excavation, and also

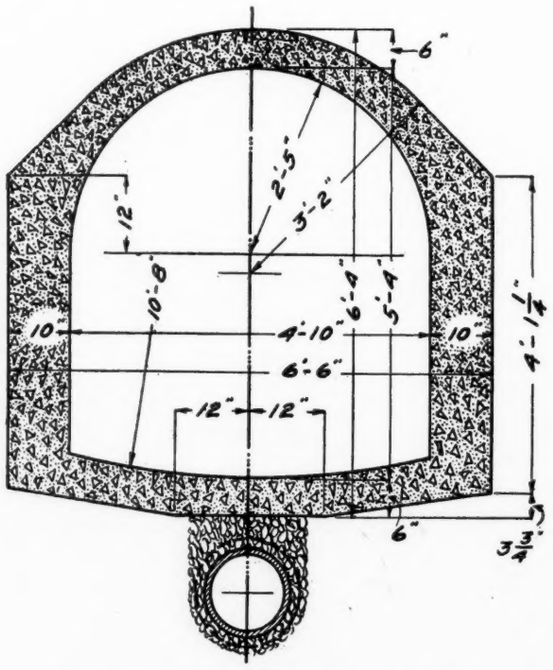


FIG. 4.—DEEP CUT SECTION, 64-INCH SEWER

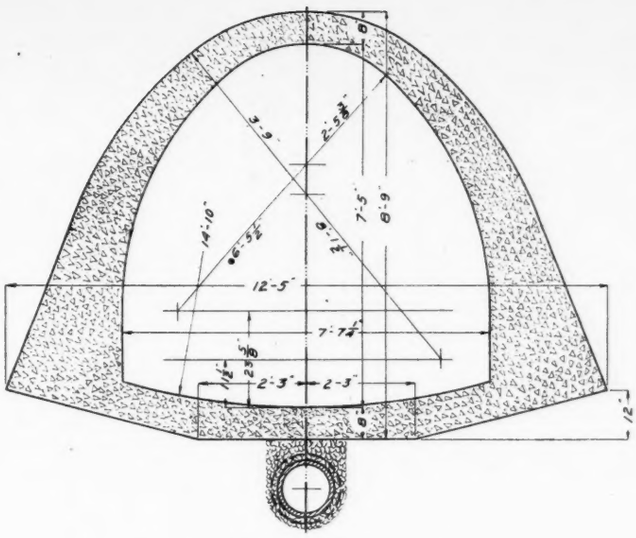


FIG. 5.—SECTION OF SEWER IN SHALLOW CUT

where it is necessary to locate the sewer line between structures already existing in the streets and only a short distance apart. In this respect the horseshoe shape is considered by Mr. Holmes to be superior to all save the egg shape; and the latter did not seem practicable in their case because of the greater vertical diameter; moreover, its chief advantage of giving high velocity to small flows is not so important in an intercepting sewer carrying combined sewage.

Where the sewer was in a shallow cutting, in which width of trench is not so important a matter and the ability of the earth to sustain the thrust of the arch is not so great, the section was modified by bringing the curve of the arch nearer to the bottom and by sloping the outside of the walls so as to transmit the thrust largely to the bottom of the trench. These two sections are shown in Figs. 4 and 5.

At one point the proximity of buildings to the creek was such as to require the location of the sewer directly along the edge of the creek. This would necessitate the construction of a retaining wall, to hold the fill over the sewer, and it was decided to combine the sewer and the retaining wall in one structure; this section, called the retaining wall section, extended for a length of about 300 feet (Figs. 7 and 8).

For determining the velocity and discharge of the horseshoe section when this was flowing less than full, a diagram was prepared by Assistant Engineer Vernon from which can be read the perimeter, area, discharge, and velocity at any depth. The illustration shows such a diagram based on computations for a section whose vertical diameter is 7 ft. 4 in., and whose slope .0007; n being taken as .015. The radius of the arch was made equal to .4545 times the diameter of the circle of equivalent area, and the radius of the invert was made equal to twice such diameter (Fig. 6).

The sewer is carried in tunnel under two of the largest and deepest sewers, one a 52 by 78-inch brick sewer and the other a 72-inch circular brick sewer, and the depth of these and of the outlet to a large extent determine the grade of the sewer, as explained above. These grades are: for 90-inch sewer .0006; for a 64-inch sewer, .0007, and for the 56-inch sewer, .0008.

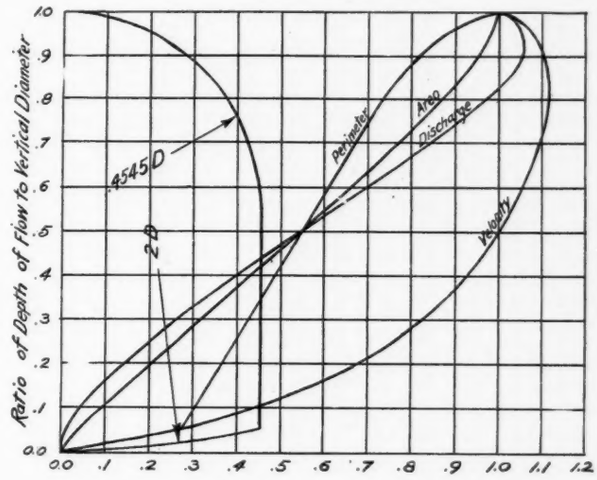


FIG. 6.—HYDRAULIC ELEMENTS OF HORSESHOE SECTION

Kutter's formula: D = Diameter of equivalent circle. Area = .796 D^2. Perimeter = 3.316 D. Hyd. Radius = .2001 D. For section with vertical diameter of 7' 4": slope .0007; n = .015.

The connections between the intercepting sewer and the sewers on the other side had to be made by inverted siphons. In order to provide for both the present flow and the future increase, and also to permit of cleaning one siphon pipe while the other is in service, two pipes are to be built in each case, to be of cast iron. One of the siphons with the manholes at the ends is shown in Fig. 9. An interceptor manhole diverts the dry weather flow to an 18-inch vitrified pipe, which is changed to an iron pipe where it enters the siphon manhole. In this manhole it is connected by a T and elbow to two vertical 10-inch cast-iron pipes, each provided with a valve at the top.

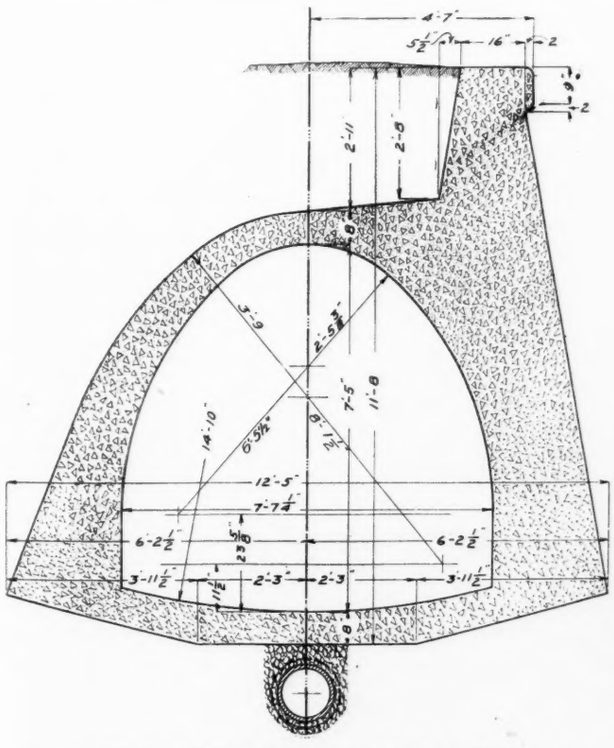


FIG. 7.—SECTION OF RETAINING WALL SECTION

FIG. 8.—RETAINING WALL SECTION OF SEWER

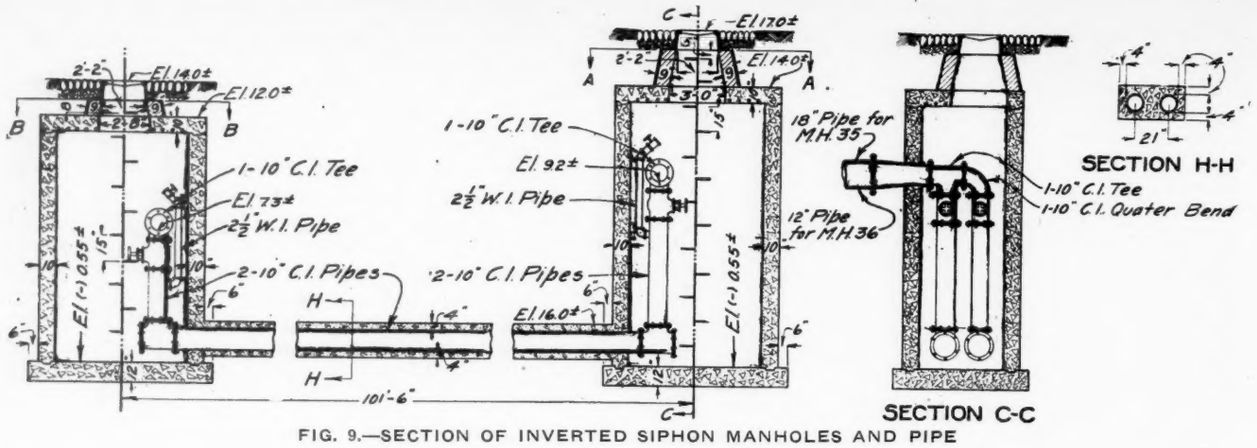


FIG. 9.—SECTION OF INVERTED SIPHON MANHOLES AND PIPE

At the bottom of each vertical pipe is a T. This and all the cast-iron work has flange connections. One end of each T has a plate bolted on which can be removed for the purpose of affording access to the horizontal siphon pipe for cleaning or other purposes. To the other end of the T is connected the 10-inch cast-iron siphon pipe. The two horizontal siphon pipes are laid side by side 21 inches apart between centers and imbedded in concrete which has a minimum thickness of 4 inches. At the other end of the siphon is a manhole practically a duplicate of the one just described. By closing the valve at each end of either siphon it can be put entirely out of service; the large manhole at each end gives ready access to the pipe, and by removing the plates at each end, sewer cleaning rods or other appliances can be shoved entirely through the pipe. It is believed, however, that ordinary stoppages can be removed by a strong flush of water, and such flush is provided for by attaching to each upright, just below the valve, a 2½-inch wrought-iron pipe connected with the water main. By opening the valve in this water connection and the siphon valve at the other end of the siphon, it is expected that the water will flush out into the sewer any but the most obstinate obstructions. This general plan seems to be an excellent one as affording every opportunity for confining the flow to either siphon, and for inspecting and cleaning the siphons; and nothing but standard materials are used in the construction.

For diverting the sewage from the old sewers to the interceptors a leaping weir was designed which is somewhat out of the ordinary. As the sewer from which the sewage was to be diverted was already laid, it was necessary to in some way either raise the invert up stream from the leaping weir or lower that below the weir. (As is probably known to most of our readers, the leaping weir is an opening in the invert of a sewer which connects with the intercepting sewer below. The upper side of this opening is made slightly higher than the lower side. A small amount of sewage flowing in the sewer will drop through this opening into the interceptor. Should the amount of sewage increase beyond a certain predetermined quantity, a part of it, owing to its greater velocity and greater height above the invert, will leap across the opening and flow through the same sewer below the leaping weir. Should the two sides of the opening be at the same elevation it would be impossible to cause much of the flow to leap the opening and at the same time have the opening wide enough to receive the amount desired to be diverted.) Instead of raising the invert for some distance up stream from the leaping weir, one section of pipe, in the case of pipe sewers, was given an inclination upward so as to bring the end which lay at the edge of the leaping weir 3 to 6 inches higher than the flow line gradient. This not only has the effect of raising the invert, but also gives the sewage an upward flow when the velocity becomes at all considerable, which helps to carry it across the opening and thus reduces the amount of drop necessary between the two sides of the opening. Also the lower side of the opening is slightly elevated, pitching down rapidly to the regular flow line; the object of this being to prevent sewage which has leaped the opening from flowing backward into it. The portion of the invert just below the opening is made of an iron trough which is so set that it is possible to move it toward or away from the opening, thus adjusting the length of leap and consequently the amount of sewage intercepted during floods. A number of experiments were conducted with leaping weirs to determine the effectiveness of this construction, and also the pitch and width of opening necessary for intercepting predetermined quantities.

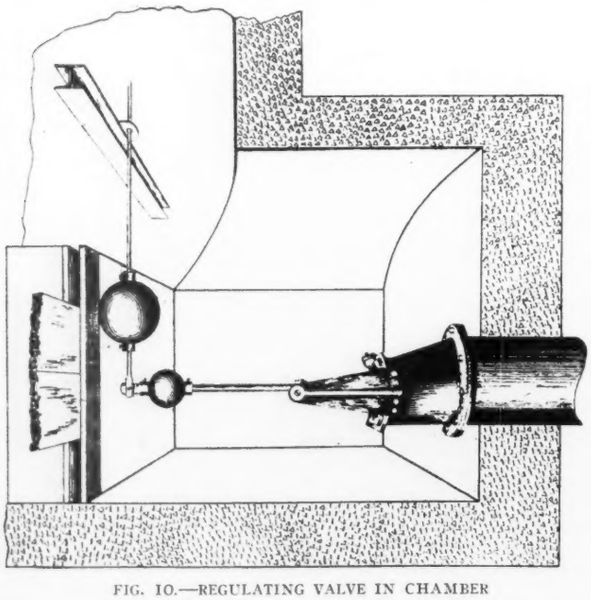


FIG. 10.—REGULATING VALVE IN CHAMBER

Regulating valves are placed in valve chambers to partially disconnect the old sewers from the interceptor in case water should back up the old sewer from the creek and threaten to gorge the interceptor. These consist of a casting, essentially a short section of pipe with a flanged end, the face of which is part of a hollow cylindrical surface. A plate whose face forms a part of a similar cylindrical surface is caused to move barely in contact with this flanged opening, the arm which carries it being hinged at the axis of the cylinder and being extended beyond this, its further end carrying a vertical rod upon which are fastened an adjustable float and also a weight. The float and weight somewhat more than counterbalance the weight of the valve plate so that, as the sewage lowers, they force down this end of the lever and thus raise the valve plate. It is seen that this valve is operated by the elevation of the water in the interceptor; so that if this becomes higher than it is estimated it should be, the end of the connection with the old sewer is partially closed so as to reduce the flow from it, and the surplus will pass out through the present opening into the creek. This is expected to take place when the amount of water

FIG. 11.—WASH DRILL BORING OUTFIT
Used to Check Location of Sewer Tunnel

emptying into the interceptor from the old sewer is double the dry weather flow.

The manhole heads over the valve chambers are of unusual construction, the 24-inch opening with its cover being placed near one edge of a large flange made to cover a 48-inch opening in the top of the masonry. This large opening was provided to permit the valve castings to be removed if this should be desired, without destroying the manholes; and the smaller opening and cover economized considerably the cost, and formed a smaller break in the street paving. The opening was placed at one side of the masonry opening in order that the man descending through it might be able to readily use the steps. In order to remove the casting it will be necessary to remove the whole manhole head and the paving above this flange; but this would be nothing like as much work as destroying the upper part of the manhole, which would be necessary were the masonry opening smaller.

In deciding upon the material for the sewer barrel, brick and concrete, both plain and reinforced, were considered. Mr. Holmes considers that a stronger sewer may be obtained by the use of concrete, which, if carefully constructed, may be made practically watertight and built with great rapidity. Reinforced concrete would, it was believed, be cheaper than plain concrete for the larger sizes; but as the minimum thickness for reinforced concrete was taken at 5 inches, it is evident that where this thickness would be ample for unreinforced concrete the reinforcement would be but an additional expense. Bids were received upon reinforced concrete, unreinforced concrete, and reinforced concrete pipes for sizes not exceeding 4 feet. The contract was let for plain concrete, reinforcement being used only at two or three places, such as crossings of the canal, etc.

One of the provisions of the contract was that the contractor would be allowed a slope of one to ten on each side of all trench excavation, and that the paving inside of this limit would be replaced by the city at its own expense. Should he, however, remove any paving outside of this limit the city would replace this also but would charge him for the same. When a trench in a roadway is back-filled the contractor is to place a temporary paving, generally of macadam, at the street level, and to maintain this in a safe condition for one year. At the end of this time he is relieved of responsibility and the city will replace the temporary paving by a permanent one.

Another feature of the contract is the method of receiving bids by sections. The entire work is divided into a number of sections, each about 200 or 300 feet long; and the plans and details show the kind of material, size of sewer, average cut, etc., in each section. The contractor then bids so much per running foot, giving a price for each section; this price to cover all work complete in that section.

At joints between construction sections into which the sewer may be divided by the contractor, keys are formed by leaving in each end a groove about one-third to one-quarter the thickness of the wall, the depth of the groove being one-half its width. It is specified that steel sheet piling must be used in all trenches where the construction with the vertical side walls is used; the sheet piling to be greased or covered with paper so that it may be withdrawn when the trench is being filled in. This was specified instead of ordinary plank sheathing, because the latter when withdrawn (especially if double sheet piling be used to keep out quicksand) would leave a space of 2 to 5 inches between the concrete and the earth, which space it would be impracticable to fill and because of which the earth could not offer its maximum resistance of the thrust of the arch.

The sewer crosses under the Erie Canal near the center of the city, the cut being carried 25 feet below the bottom of the canal or 35½ feet below the top of the banks. This work was completed last winter while the water was out of the canal.

A section which passes under railroad tracks and trolley

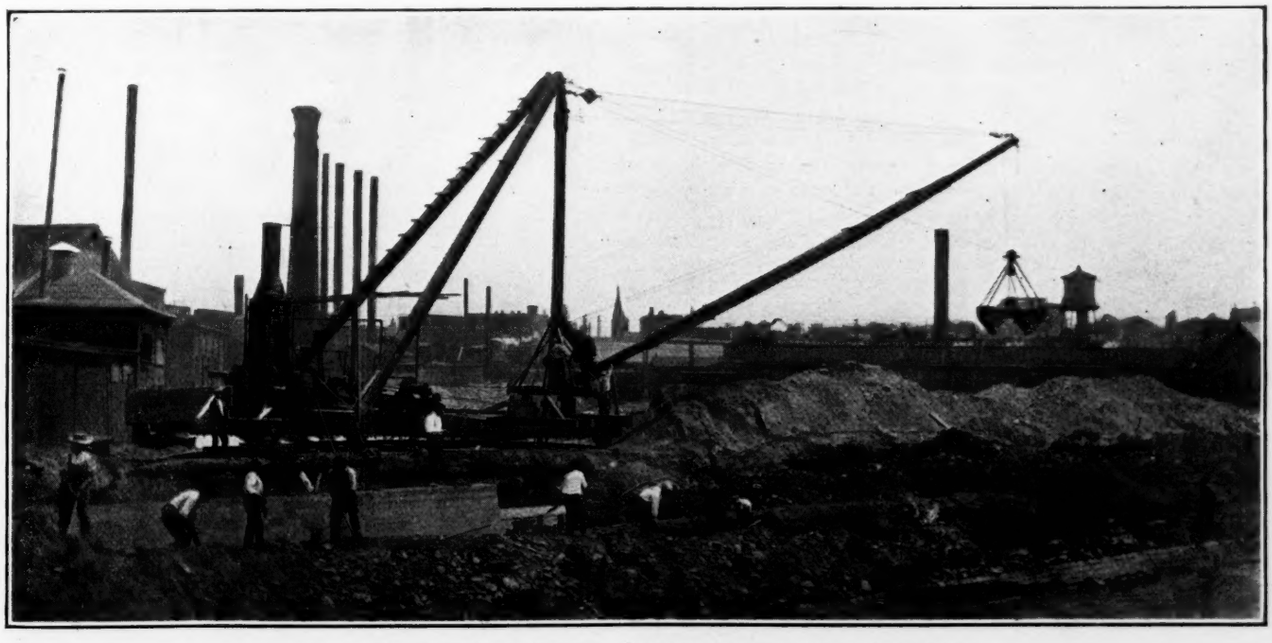


FIG. 12.—EXCAVATING SEWER TRENCH ALONG BANK OF CREEK

FIG. 13.—COFFERDAM FOR INVERTED SIPHON

tracks at a considerable depth is being carried in tunnel. This tunnel will be so small that it would be very difficult to carry a line through it by transit. Accordingly the wash drill boring outfit has been used to sink pipes vertically along the center line of the sewer to a depth just below the top of the excavation, which will be used to check up the alignment as each pipe is reached in turn (Fig. 11).

A contract, known as contract No. 2, was let in 1908 to the Read-Coddington Engineering Company for about $220,000 for deepening and lining Onondaga Creek for a distance of about 2⅓ miles. After performing a considerable part of this work this firm was declared by the city to have abandoned its contract and the work was relet as contract No. 4 to John Young, of Syracuse, and was assigned by him to William Fitzgerald, who is now carrying on the work. The board and the Read-Coddington Engineering Company are at present engaged in litigation concerning contract No. 2. This company deepened and lined about 1,200 feet of channel by January 1, 1909, but did practically no work after that date.

One of the difficulties in this work was the handling of the flow of the creek. A steel sheet-pile coffer-dam was driven across the creek channel between the abutments of Belden Avenue bridge, about one-fourth mile above the lower end of the work, and a large semi-circular wooden flume was erected along the bank of the creek to a point just below the site of the work. This flume was 10 feet in diameter, of wooden lagging resting on cradles and tied together with iron bands, the upper ends of which bands passed through horizontal timbers which spanned the top of the flume and held it firmly to shape. On these cross-timbers above the flume was laid a track on which materials were carried back and forth by cars. This flume discharged at its lower end through a large rectangular outlet chamber into the creek below the work.

The excavation was done by steam shovel, the excavated material being hauled by locomotive in side-dump cars which traveled on a contractor's track in the bed of the channel. Good material was found throughout the entire stretch, except for 75 feet, where quicksand was encountered. The matter of shaping the channel and laying the blocks was, therefore, a comparatively simple one. A considerable flood occurred during the prosecution of the work, but occasioned very little damage or loss. After being carried up to the desired height the blocks were furnished with a coping of concrete and in most cases a berme was provided and the earth sloped back from this to the natural ground elevation.

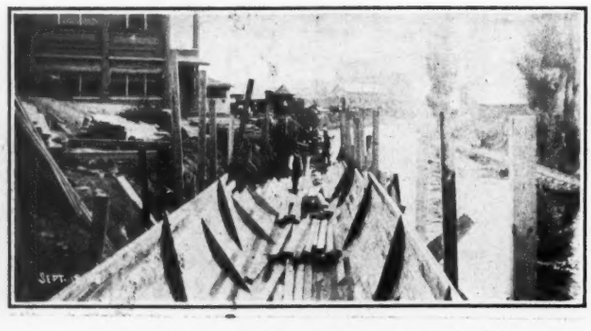


FIG. 14.—WOODEN FLUME UNDER CONSTRUCTION

At the present time Contractor Fitzgerald is getting the next section into shape for actual work, and is cleaning out of the completed channel a considerable amount of gravel and sand which washed in during the winter and spring. Instead of a wooden flume this contractor is intending to use one of steel plates rolled to a semi-cylindrical form and bolted together, which will be supported on piles driven along the bank of the creek. For driving these piles a pile driver will be used carried by a large scow, which will float in the creek, being hauled to and held in any desired position by a cable carried upstream and by guy lines to the two banks. It will probably be several weeks before the flume has been completed and the channel laid dry for the continuation of the work.

Most of the inverted siphons are included in the contract for deepening and lining the creek and are being put in while no water is flowing in the creek. The lowest one, however, is below where such creek work is to be done, and this siphon is being carried across by means of cofferdams. A cofferdam

FIG. 15.—LOWER END OF FLUME BEFORE DREDGING

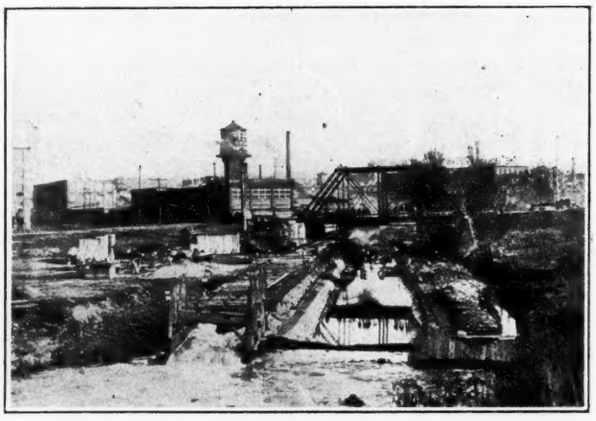


FIG. 16.—LOWER END OF FLUME AND COMPLETED IMPROVEMENT

is carried out from one bank half way across the creek. The siphon pipes are laid in this and then a cofferdam is built enclosing the line across the other half of the creek (the first cofferdam having been removed to permit the water to pass down the creek), and the balance of the siphon is built. The contractor is building the cofferdam by driving two rows of 6 or 8-foot lengths of steel sheet piling with a hand pile driver, these two rows being two or three feet apart and the space between them being filled with clay.

At the present time two shafts have been sunk in connection with the tunneling under the railroad and trolley tracks, and tunnel headings started in both directions. The material at the larger shaft is being handled by a 4-ton railroad derrick constructed by the Industrial Works of Bay City, Mich. This raises the material in buckets and carries it back along a short portable track, where it either piles it up temporarily or loads

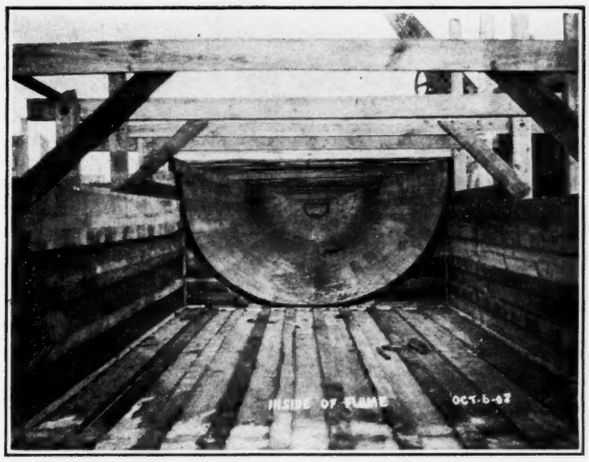


FIG. 17.—END OF FLUME AND CHAMBER

it into wagons. At the other shaft the material is raised by a stationary stiff-legged derrick operated by steam with a double drum hoist. Close to the shaft and, like it, in the center of the street is a large bin elevated on a wooden trestle, its bottom having a slope of approximately 45 degrees; the bin being provided with a discharge opening and spout. The material excavated is deposited in the bin and from this is allowed to discharge into carts which are backed up under the spout. The excavation is not being carried on rapidly enough to make it economical to operate a line of wagons, hence the bin for preventing wagons from having to wait for a load, or the dirt from accumulating in the shaft.

Considerable water is found in both of these shafts. That at the larger is handled by a Lawrence centrifugal pump run by a General Electric Company's motor, both placed in the bottom of the shaft, current for which is obtained from the wires of the local company which pass along the street above. In the smaller shaft the water is at present being handled by an Emerson pump; the amount being raised during the visit of a representative of this paper being only five or ten gallons a minute.

The concrete work in the bottom of the larger shaft is being made with Atlas cement and mixed with two No. 6 Foote mixers. The concrete is shot down to the bottom of the shaft through galvanized iron tubes with riveted seams and reinforced ends, about 10 inches in diameter and five feet long. Each of these is made slightly smaller at the lower end than at the upper, and with two loops riveted opposite each other on each end. A series of these is then made into a long tube by slipping the lower end of one into the upper end of the next following and fastening the two together by wires passed through the loops just mentioned. At the top a galvanized iron hopper or funnel is placed and fastened to the series of tubes in the same way. There is a certain flexibility to this line of tubes, and there is little difficulty in delivering the concrete to any point where required; the hopper being kept directly under the spout of the mixer so that the concrete is delivered directly from the latter to the point where it is desired.

The contractor's plant on the creek work which was done previous to the present season included a steam shovel; three-foot gauge dinky locomotive, 8 dump cars, and about 1,500 feet of track; nine two-foot gauge industrial cars and the track therefor laid on the top of the flume; two hoisting engines; one 10-hp engine; one derrick with orange peel excavator; three boilers; four centrifugal and two reciprocating pumps; one concrete mixer; one large motor truck, used for transporting the concrete blocks and other materials to and from the site of the work; and buckets, wheelbarrows, turn-tables, lumber, etc.; which, together with about 1,300 feet of semi-circular flume made of hard pine, was estimated to have a value of about $20,000.

REMOVING IRON FROM WATER

Treatment of Well Water at Fort Hancock—Aeration not Successful—Use of Calcium Hydrate and Filtration Adopted Successfully

By CHURCHILL HUNGERFORD

THERE have been many attempts made to remove iron from water. The favorite method is aeration followed by filtration. This may or may not be effective. Theoretically, the bicarbonate of iron on coming in contact with the oxygen of the atmosphere is converted into the insoluble oxide, or iron rust, but there are certain conditions which often interfere greatly with this oxidation process. It is seldom that a well water is met with in which over 75 per cent. of the iron can be oxidized by a reasonable period of aeration. Small proportions of organic matter in the water form certain indefinite compounds with the iron and cause it to resist the oxidizing influence of the atmosphere, with the result that the iron and the organic matter together pass through the filter. It is this same organic compound that accounts for the iron in solution in many surface waters, and were it not for this combination many streams which now contain iron in troublesome quantities would naturally purify themselves by the simple oxidizing effect of the air.

Charcoal filters have met with more or less success when new, but the charcoal soon loses whatever oxidizing property it may have originally possessed and simply becomes a granular filter which will remove the suspended particles of matter, but will have little effect upon the dissolved matter. In fact, occasions have been noted wherein the filtered water contained more iron than the unfiltered, the charcoal seeming to possess the property of storing iron for a time and then redissolving it and permitting it to pass back into the water.

There is, fortunately, a complete remedy for all iron problems. No matter what the form in which the iron appears it can be readily reduced below two-tenths of one part per million at a cost for chemicals of less than sixty cents per million gallons. All forms of iron that are soluble in water, either the bicarbonate or the sulphate, are instantly precipitated by this treatment and can be completely filtered out by the filter. The chemical used is quick-lime and the apparatus consists of a device for adding lime—in its chemical equivalent to the iron—to the water, and a specially constructed sand filter. This apparatus does not appreciably harden the water, but it does remove the iron to such a degree that it can never cause any trouble in any dyeing, bleaching or finishing process, nor does it exist in sufficient quantities to support a growth of crenothrix.

An interesting example of this device was installed about two years ago for the United States Government at Fort Hancock, Sandy Hook, N. J. The water supply at Fort Hancock is derived from two deep wells, one of which is 450 feet and the other 760 feet in depth. The water flows clear from the wells, but on standing a short time becomes very cloudy. An air lift is used to pump the water from the wells, the two together delivering about six hundred and fifty gallons per minute. The amount of iron in the water varies somewhat, but ranges from five to seven parts per million, which may be considered a fairly high degree of contamination.

When the wells were first put down it was found that the water could not be used about the fort for any purpose whatever. The Government engineers, observing that the iron was apparently very readily precipitated, built two large concrete reservoirs capable of holding about a week's supply of water. As the air lift thoroughly aerated the water they argued that it must consequently thoroughly oxidize the iron and that by giving several days for sedimentation this would all be precipitated. The plant was accordingly constructed. It failed to make the water from the wells suitable for any purpose beyond that of sprinkling the lawns, even though there was at least six days' sedimentation. It still retained its chalybeate

taste and stained everything it touched a deep reddish brown. Upon analysis it was found that the water still contained over two parts per million of iron which had resisted the oxidizing effect of the air. Bids were then asked by the Government for an apparatus of the bidders' own design and guaranteed to be capable of reducing the iron content of the water to less than three-tenths of a part per million at all times. Recognizing the value of calcium hydrate as an oxidizing agent, the Government selected the only apparatus presented which contemplated the use of lime and awarded the contract for a plant of 760,000 gallons daily capacity to Hungerford & Terry, Inc., of Philadelphia, Pa., for a plant of their design.

This purification plant consists of two distinct portions: First, an apparatus for reducing all of the dissolved iron to an insoluble form; and secondly an apparatus for removing this precipitated iron from the water.

It is necessary that lime should be applied in exactly the right proportions. If insufficient lime is applied complete precipitation is not obtained, and on the other hand, if too much lime is applied the water may be hardened. In this instance the precipitating apparatus consisted of a device known as a saturator for the manufacture of clear lime water upon a large scale and an apparatus for applying the lime water accurately to the raw water. Clear lime water contains about 78 grains to the gallon of quick lime in the form of the hydroxide. This solution being a saturated one contains, of course, always the same amount of lime, so that all that is necessary to obtain an exactly proportionate amount of lime to the amount of water applied is to apply the lime water in the same proportionate quantities. An automatic measuring device does this so exactly that the amount of lime can be regulated so that the error is less than 1/100 of a grain to the gallon. Fluctuations in the rate of discharge from the pumps do not make any difference in the proportionate amount of lime applied.

As soon as the lime is applied to the water, which is, as has been before stated, thoroughly aerated by the air lift, precipitation takes place and the clear water assumes a bluish turbid cast indicating that the iron is converted into the form of the hydroxide. This being a very unstable compound is rapidly converted into the sesquioxide or common iron rust, which substance being insoluble in the alkaline water is readily removed in the subsequent filtration process.

The reservoirs previously installed are now utilized as sedimentation and reaction basins. They are not necessary parts of the apparatus, but having been installed are now utilized. After the water has been treated with lime and has passed through the basins a portion of the iron has settled out and the water is pumped through the filters to the standpipe supplying the post.

The filters are enclosed in heavy steel cases tested to one hundred and fifty pounds pressure, and the filter beds proper consist of specially prepared sand. The filters are so constructed that the tendency of the iron to form concretions around the sand grains is entirely done away with. They remove all traces of the iron and at intervals of about four days are washed by reversing the flow through them. It takes about five minutes to wash each filter or ten minutes to wash two filters, and at the end of the washing period the filter bed is entirely freed from iron, and they are again ready to run for another period of four days.

The washing of the filters is a somewhat interesting process. They are so constructed that the wash water is applied uniformly underneath every portion of the filter bed, and the upward rush of water raises the sand about four inches so that it assumes the condition of a bed of quick sand. This is due to the fact that the sand grains are really afloat in the water, and are dancing up and down passing and repassing each other with such rapidity that all of the iron oxide is rubbed off from them. So vigorous is this washing process that an especially hard sand has to be used, as otherwise the sand grains themselves would become worn out in the course of time and be washed out of the filter. As it is, the loss of sand is about one inch yearly, but as there is never any necessity of renewing the filter bed by reason of its becoming foul, this loss is only a trifling matter.

The following analyses made in the office of the Surgeon General indicate the efficiency of the apparatus:

I have the honor to report that I have made the examinations of the two samples of water sent to this office through the Quartermaster General; U. S. A., by Capt. M. N. Falls, U. S. A. Constructing Quartermaster, Ft. Hancock, N. J., for that purpose, and beg to present the results as follows:

The first is the water as it comes from the wells. It is a turbid water of a very faintly alkaline reaction, odorless, of a yellowish color, due to the marked amount of suspended ferruginous matter.

The second is the water after treatment through the filtration apparatus. It is absolutely clear and colorless, is faintly alkaline in reaction, contains an almost inappreciable sediment on standing many hours, and is without odor. There is no visible charring or carbonization in the residue on its incineration. There thus appears a great improvement in the water by the removal of what small amount of organic matter it contained, together with practically all of the iron, and at the same time the amount of the mineral matter was diminished in its total by one part per million. The actual amount of iron present in this sample is 0.140 part per 1,000,000 while its hardness (Clark's) is 4.52 per 100,000. EDWIN R. HODGE, Chemist in Charge.

A second sample using more lime in the purifying process was sent on to Washington after the first one as above reported. Following is the Government chemist's report:

I have the honor to report that I have made the examination of the second sample of water received at this office on the second instant from the Constructing Quartermaster, U. S. Army, Fort Hancock, N. J., through the Quartermaster General U. S. A., with a view of determining the amount of iron therein, and its conformity to the specifications for its purification by the newly installed filtration plant at that post. The figures are as follows:

Contained iron 0.088 parts per 1,000,000 parts.

Total solids. Treated water 49.50; raw water, 82.50 per 1,000,000 parts. EDWIN R. HODGE, Chemist in Charge.

In view of the above reports, it seems as if the satisfactory treatment of iron waters has been accomplished.—*Textile World Record.*

STREET CLEANING IN VIENNA

IN Vienna, Austria, the street cleaning is largely done by the city, although a part of the carts and horses used are obtained from private parties by contract. The immediate management and supervision of the street cleaning in all the districts, save three, are in charge of the district councilmen, in consequence of which there are different methods of carrying on the work. The laborers, mostly persons unfit for any other kind of work, are paid low wages. The municipality has at present 317 horses, 51 sweeping machines, 44 watering carts, 110 dirt carts and 907 other carts for various purposes. The municipality cleans all thoroughfares and the sidewalks in front of vacant lots. The cleaning of the other sidewalks is obligatory on house owners, as is also the watering of the same, the latter being required in dry weather between 7 and 8 in the morning and between 2 and 3 in the afternoon. Owners also must keep cleared of snow and ice a path 6 feet 6 inches wide on the sidewalk.

In the city proper streets paved with granite and wood are cleaned nightly with sweeping machines, the preliminary sprinkling being done by patent automatic watering carts. Of the other streets, the most important are cleaned by machines at night. The sweeping machines are given about 331,000 square feet each to clean. In the business district cleaning begins at 11:30 p. m., and elsewhere at 10 p. m.; and ends about seven hours later. For gathering up the sweepings there are 15 groups of men, each composed of a foreman and ten laborers, who begin work one-half hour after the machines start.

Asphalt streets are washed between 5 and 8 in the morning, and are cleaned with hand squeegees. Heavy traffic thoroughfares are swept by hand at night; all other streets not swept by machine are cleaned with hand brooms in the daytime. The cost of cleaning the streets in 1909 was approximately $1,157,700.

RAPID TRANSIT PROBLEMS

Report on Conditions at Pittsburg—Rights of Patron, Operator, Municipality, Property Owner and Financier Considered—Traffic Necessary to Make Investment Pay

A REPORT has been made, or rather a series of reports, during the past two or three months by Mr. Bion J. Arnold, of Chicago, to the Mayor of Pittsburg, Pa., concerning the rapid transit problems of that city. These reports are quite lengthy and of course much of the matter dealt with and conclusions reached are of purely local interest. On the other hand, however, many of the statements made by Mr. Arnold are of general application and are the result of his long study of these problems in many cities.

This report is very apparently one in which the interests of both the public and the transportation company are studied thoroughly and an effort made to find a solution which will secure to each the best obtainable results. The rights of the patron, the operator, the municipality, the property owner, and the financier are borne in mind. The first expects adequate service, safety and comfort, and the maximum speed possible. Also through cars to his destination or at least universal transfers.

The operator can secure the best results with an efficient and up-to-date equipment, construction sufficiently substantial to reduce maintenance cost to a minimum and such regulation of street traffic that street cars have the right of way. Favorable conditions exist when peak loads are not excessive, when there is a large amount of all day travel, when the flow of traffic is not all one way and when the profit of the short haul business more than offsets the losses from the long hauls.

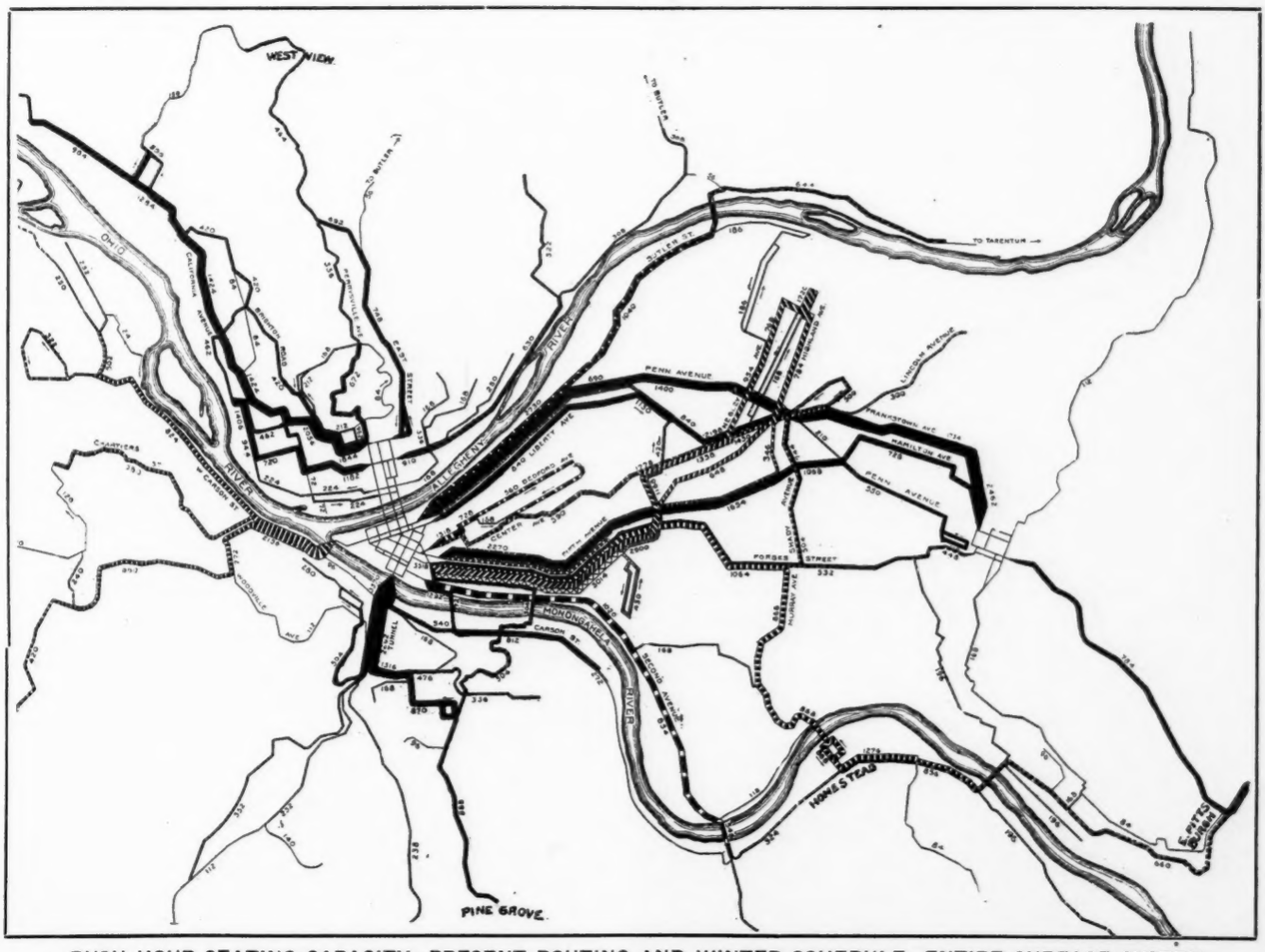
The municipality desires that passengers be carried between outlying districts and their place of business in minimum time at lowest cost, in order to discourage congestion; that well ventilated subways or roads in open cut or upon elevated structures be used by electrified terminal systems of steam roads; that surface systems furnish and maintain street paving between and adjacent to its tracks, sprinkle the streets, and give free transportation to mail carriers, firemen, policemen and other city employees, with special low rates to school children and workmen; that transmission and feeder cables be placed underground rather than on poles and in certain restricted districts the underground conduit system be insisted upon. The franchises should be indeterminate so the "franchise values" will be eliminated and regulation more certain of accomplishing the desired end.

Financial requirements include a rate of fare yielding an income sufficient to cover the expense of transportation, maintenance, reserve for depreciation and damages, interest charges, and a fair return on the investment. The surplus, if any, should be devoted to better service and extensions, or be divided with the city in lieu of taxes, franchise payments or other civic burdens.

In considering rates, credit should be allowed for past burdens of non-paying years and for development expenses involved in creating, combining and building up the property and in bringing it to a paying basis. Extraordinary expenses should be amortized, and reserves for replacement of equipment, personal damages, fires and other contingencies should be provided.

Transportation in a city is a natural monopoly; therefore no district should be served with two competing transit systems when one can furnish better service than with the business divided.

The building of extensions in the undeveloped districts should



RUSH HOUR SEATING CAPACITY—PRESENT ROUTING AND WINTER SCHEDULE—ENTIRE SURFACE SYSTEM

be assisted by assessment on the property benefited, and the operating loss on non-paying lines should be financed so as not to be too heavy a burden upon the remainder of the system. Transit facilities should keep somewhat in advance of actual requirements in each district. The problem in each city is to secure to the greatest possible degree all of the above. There are probably few localities where the income from rates is sufficient to secure all of them; but improved management can in many cases succeed in increasing the income. It must be recognized that private capital will not be attracted to such enterprise unless a return is allowed somewhat greater than the current rates of interest. The correct solution of the problem involves the determination of what constitutes a fair requirement of:

1. Original investment.
2. Legal, technical and financial development expenses.
3. Working capital.
4. Adequate service.
5. Possible income.
6. Operating and maintenance expense.
7. Taxes and franchise payments.
8. Reserve funds for insurance, damages and depreciation.
9. Return on investment.
10. Provision for future extensions.
11. Facilities for rapid transit.

Mr. Arnold states that the present tendencies are toward recognizing the actual investment required to provide adequate service. Also in favor of building extensions into new territory by means of assessment; that is, charging the property benefited with at least the cost of the permanent way. This method of financing branch lines which will be operated at a loss for some time has been worked out in Berlin in connection with the underground road, and will probably be adopted for certain developments in New York City. There is also a demand for better lighted, better heated and more comfortable cars, with less crowding.

He considers that three-cent fares cannot prove a success in combination with these modern improvements; also that more than five cents would be vigorously resisted, unless in the form of an additional charge for transfers. Concerning the method of transportation he states that, "the operating expenses per car mile are from ¾ to ½ as much for a car in a subway or on an elevated structure as upon the street, and at the same time the subway or elevated car runs at fully double the speed and carries at least 50 per cent more seats. . . . The problem is to *secure sufficient business* to run enough car miles over the more expensive structure so that the fixed charges *per car mile* will not be excessive. As a rule, any subway or elevated system will not prove financially successful in which the car miles run during any year are not equal in amount to at least half the investment in dollars then in property." There are certain limits both above and below which it is not economical to operate a given system of transportation. Consequently, economy requires a zone system of operation, the zones being those of transportation systems rather than of distance or of fares.

There is large profit in most cities from the short haul business, but this is now heing handled as a rule in cars which run practically to the ends of their lines, so that much of the short haul profit is absorbed by the expense of operating with empty seats in the outlying district. A saving can therefore be effected by a system of handling short haul passengers in short haul cars. (In New York City a continuous ride of 17½ miles may be had for one fare, and the average passenger travel is about five miles).

Mr. Arnold calls attention to the fact previously stated that, now that transportation companies are fairly well controlled by commissions, there is little argument in favor of taxing such companies heavily, since such taxes must be added to the fares or deducted from the amount available for improvements to the service. The same argument applies to the indirect taxation often demanded in the form of paving between and along tracks, sprinkling streets, and other services which could be rendered probably more effectively by the city itself. The setting aside of a depreciation fund he considers a duty and necessity which can not be neglected.

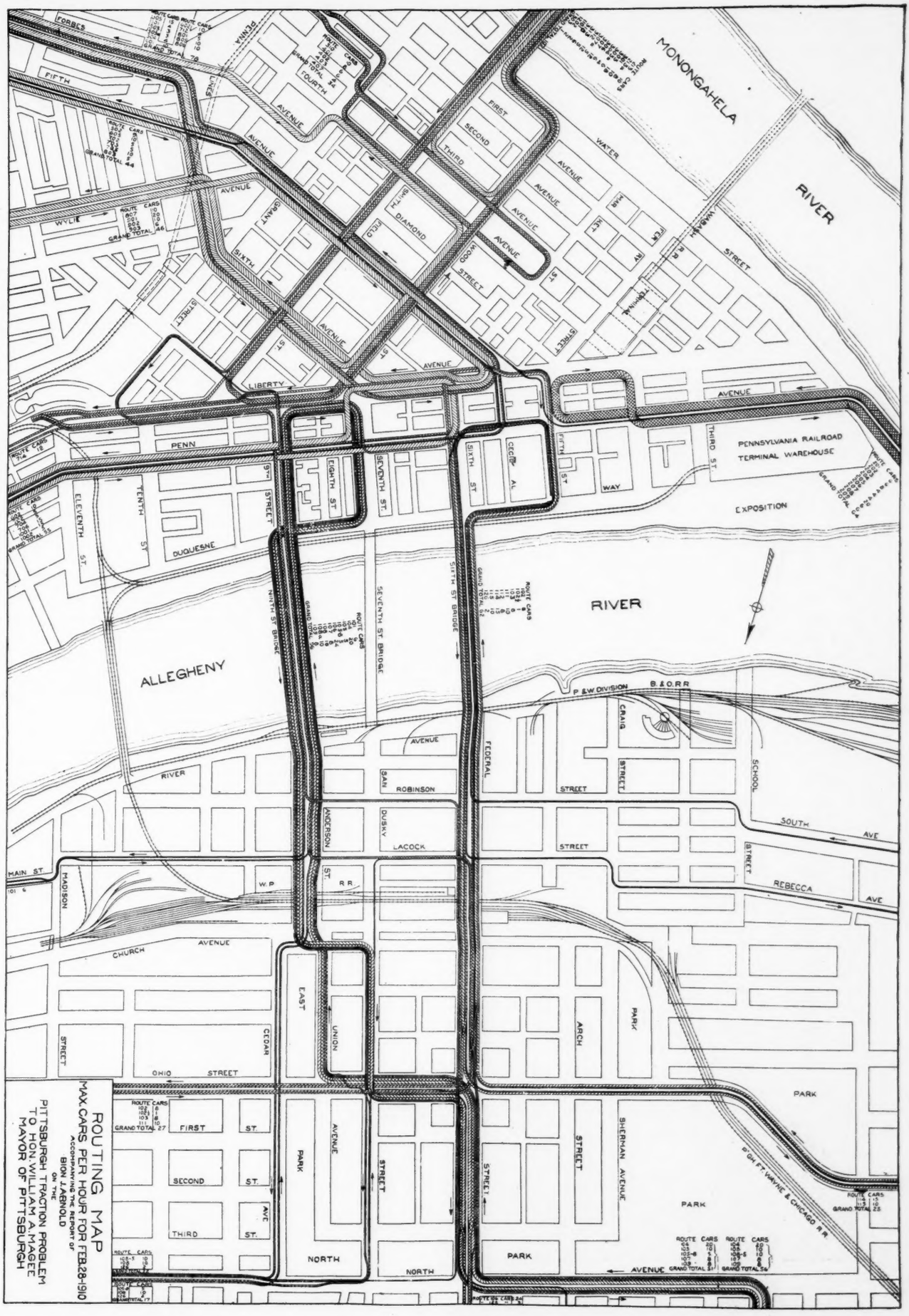
Attention is called to the fact that empty seats cost as much to operate as occupied seats, and that a seat for every passenger during the rush hours must mean the curtailment of the service during the non-rush hours; that new cars and new track cannot be furnished until old equipment has been in service a reasonable length of time. If the best service can be rendered by establishing through routes and giving transfers, thus making it easy and pleasant to ride, these methods should be adopted in an effort to increase gross earnings. Publicity of intention and results on the part of the company is the best policy. The city should co-operate with the company on street traffic regulation, widening the street where necessary, and issuing permits for extensions and new connections which are necessary for the best routing system. Unnecessary burdens should be removed so that the money can be devoted to improving the service. But promoters and stockholders must realize that the day for exploiting such enterprises has passed, and that only fair returns on actual investment should be expected.

Taking up the problem presenting itself in Pittsburg, Mr. Arnold states that of the 581 miles of track comprising the system of the Pittsburg Railways Company 260 miles are located inside of the city limits and the remainder serves the surrounding boroughs. Of the million people served by the system, about one-half are found in the city proper. The topography of the city, with its many diverging valleys and steep hill sides, makes the transportation problem a difficult one; the fact that the business center is concentrated on a point of 300 acres bounded by rivers adding the tendency to congestion of traffic to the other difficulties. Given the co-operation of the company in the solution of the problem, such solution is rendered much more simple and probable by the fact that the entire system is already under one control.

Owing to the narrow streets in the congested central area, elevated roads appear almost out of the question, and subways between the downtown business district and certain centers in the outlying districts appear a natural and probable development. Especially is a subway admirably adapted to overcome topographical difficulties such as hills, ravines and rivers. He therefore decides in favor of subways, concerning which the problem is, where and how soon these should be built.

The first cost of a double track subway fully equipped is estimated to be between one million and two million dollars per mile of single track, depending upon the physical difficulties, size, elaborateness of design, number of stations, amount of rolling stock and other equipment, value of real estate, etc. Experience has shown that while the average operating expense of a surface system is from 60 to 70 per cent of passenger earnings, a subway can be operated on from 40 to 60 per cent where the density of traffic is sufficient to warrant subways. The annual earnings from operation should amount to not less than 10 per cent of the first cost, and seldom will amount to more than 15 per cent, for before reaching this latter figure demands for extensions will arise. Given these figures and the cost of a given route, the general solution of the question when to build would be, "when the population served will provide the income required as indicated by these figures." The earnings per capita of the surface system in Pittsburg are now about $10.00, but in certain sections run as high as $28.00 per head of "sleeping population." There is a tendency for the per capita contribution to income to increase as the population increases. Mr. Arnold takes $12.00 as a conservative estimate of the future per capita contribution. This means that an investment of $100 per person served by a given line is warranted as an expenditure in constructing it. Neglecting all but the conditions above referred to, it is a simple calculation to determine just when a subway can be built into any district and prove profitable, and also when extensions of the same can profitably be made.

RUSH HOUR CAR MOVEMENT—PRESENT ROUTING AND WINTER SCHEDULE—DOWNTOWN TERMINAL DISTRICT



Meantime, transportation routes for these districts would necessarily consist of surface lines serving as feeders to the subway.

The financial burdens which must be carried by any subsurface system comprise:

1. Operating expenses, including taxes, damages, insurance and maintenance, varying from 40 to 60 per cent of the passenger income.

2. An annual depreciation fund varying from three to five per cent of the cost of equipment.

3. An amortization fund which, at 1 per cent per year on cost of construction, will retire the investment in structure in fifty years; or at ½ per cent per year, in seventy-five years.

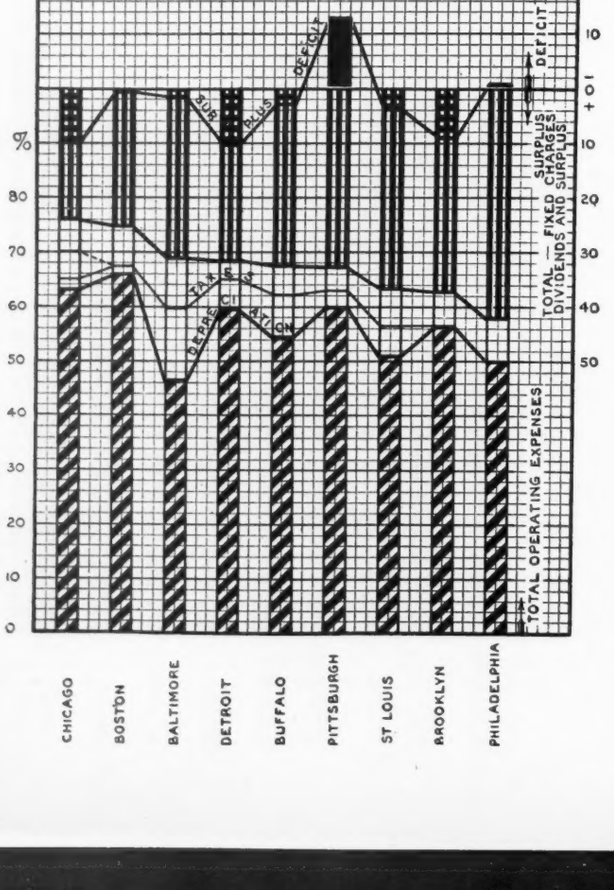
4. A contingent reserve fund to take care of extraordinary accidents and other unforeseen contingencies, which should accumulate and be kept invested until it reaches about 5 per cent of the total cost.

5. Interest on cost, which at present may vary from a maximum of about 8 per cent with private capital down to 4 per cent with municipal credit.

6. Discount fund, which should offset the discount on bonds or other similar indebtedness in about twenty years.

7. Surplus profits, which in case of private ownership should be divided with the city on some equitable and agreed basis, or be used for building extensions.

The financial difficulties of the Pittsburg lines Mr. Arnold attributes to the excessive actual cost of the property, including reconstructions since the first horse car lines, which have been capitalized; non-paying extensions, many of them built to keep out competition; overcapitalization, most of it probably due to the introduction of "water" on the consolidation of the companies. The company has laid aside no depreciation fund, and the property has not been kept up in good condition. Business has been lost because of this latter fact and the company has lost the good will of the patrons, which should be one of its best assets. The routing is inconsistent, being the result of development and not of design; more cars being run on some routes and less on others than are needed. Unfortunately, most of these conditions are cumulative, and



while the difficulty of meeting them is great, it will increase rapidly during the next few years and end in absolute collapse, both physical and financial, within a few years unless promptly reformed.

In studying these conditions, it is instructive to compare Pittsburg with other cities. Such a comparison is shown graphically in the accompanying diagram.

Two important quantities shown here are (a) Total Operating expenses (not including depreciation reserve or taxes) and (b) Total Fixed charges, dividends and surplus (or deficit). The former represents the equivalent of service rendered, i. e., that per cent of income put back into the property. The latter represents the total amount retained by the company or its subsidiaries, i. e., the per cent of income taken out of the property.

From the standpoint of the riding public, this diagram possesses an unusual interest, as it shows what proportion of the fare is retained by the operating company as returns from its investment. Whether or not the return is entirely adequate in each case involves a number of factors not shown here, but it suffices to draw attention, simply to the relative cost *to the patrons* of the railway service in the various cities, and to facilitate comparison the cities are arranged according to the relative return to the operating company.

The important thing to note is that if the fixed charges and dividends charged against the Pittsburg system represent actual expenditures, then Pittsburg pays for its traction service at a higher rate than any of the cities shown, i. e., over 46 per cent of the income; however, the deficit of 13 per cent shown reduces this charge to about 33 per cent, which is less than some of the cities show.

It is instructive to note that in Chicago and in Boston the return to the companies is relatively smaller than in any of the other cities. In Chicago the new traction ordinance fixes the return on the investment, while in Boston the capitalization is regulated by the State Railroad Commission.

The latest available fiscal returns are reported—all on a basis of per cent of total income.

One of the accompanying maps shows the rush hour car movement in the downtown terminal district. This diagram, by means of shaded lines varying in width with the number of cars on each street during one rush hour, shows the amount and location of the congestion in the downtown district. The system of turning back the cars on the various routes in the downtown business center is by means of loops with no stub end terminals except one at the Union Depot. This loop routing results in many conflicting crossings at street intersections on account of the converging layout which was brought about by the two systems of streets developing parallel to the rivers. The maximum number of cars scheduled to leave the downtown section of Pittsburg is 598 per hour.

The other map shows the rush hour seating capacity for the entire surface system, according to the present routing and winter schedule. In this the relative widths of the lines indicate the number of seats *scheduled* one way on each route during a rush hour. The main line and the branch lines are plainly shown. The total number of seats due to leave the central business district at "The Point" and on the North Side is 23,942 during the peak hour of the evening rush. This diagram shows where these seats go and how the system is routed on the "direct" principle, with most of the cars running from the center of the city to the outlying districts with very few cross-town lines.

To improve the routing Mr. Arnold suggests: 1. Determine relation which should exist between income and service, apportioning certain percentages of gross earnings to service and to fixed charges and profits. 2. Study requirements and physical difficulties of each section of the city. 3. Establish principles of routing which will result in most economical distribution of car miles available. 4. Provide system for recording and checking schedules, delays and accidents. 5. Make provision for extending and altering tracks and routes to care for growing and shifting demands.

GARBAGE INCINERATORS FOR SAN FRANCISCO

Study of Composition of Refuse—Methods of Sampling and Testing—Average Amounts per Month—Relative Amounts of Ashes, Garbage and Rubbish—Analyses of Refuse—Description and Specifications of Plant

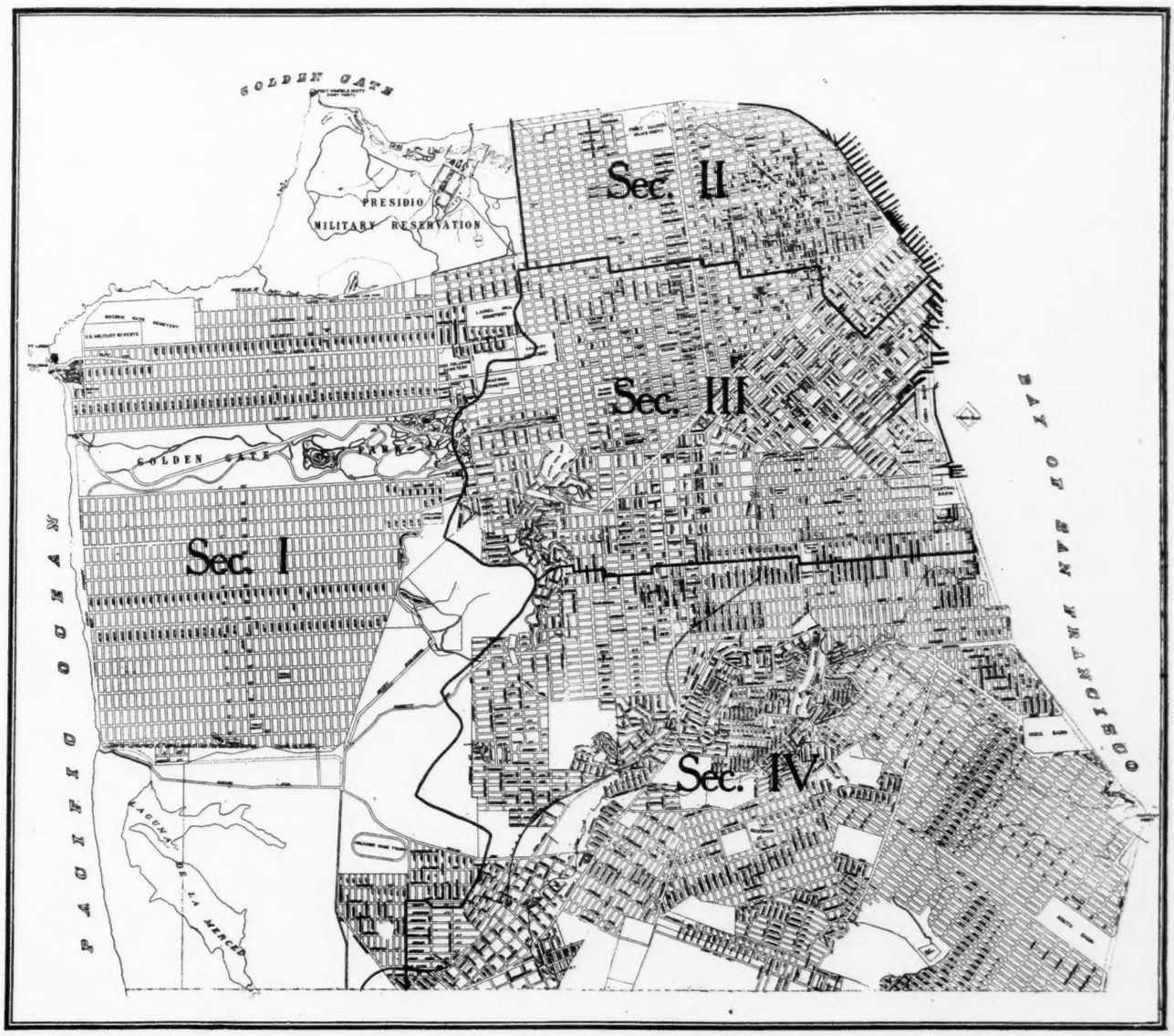
THE city of San Francisco, Cal., will, in a few weeks, receive bids for the construction of two incinerating plants for destruction of the combined refuse of the city. These two plants are located in two different sections of the city with the idea of minimizing the haul. Each plant is to contain two units, having a combined capacity of 120 tons per day; the capacity of each unit being fixed at 60 tons, and provision being made for increasing each of the plants by the addition of further units of this capacity. The specifications give evidence of unusual care in preparation on the part of city engineer Marsdon Manson, and occupy a book of 147 pages, which is thoroughly indexed. In many ways the form of the specifications and contract is similar to that adopted for the Milwaukee plant. While the study of the character and also of the amount of the refuse collected at San Francisco was apparently not as long continued nor as carefully made as at the Borough of Richmond, N. Y., it was much more complete and of greater value than the information which is or can be furnished by most cities asking for bids of a similar nature.

The city of San Francisco is divided into four collection districts, the boundaries of which are indicated on the accompanying map. For the present the refuse collection in section 2 and a portion of section 1 north of Golden Gate Park will be hauled to the plant known as the North Beach station; and that from section 3 and the remainder of section 1 to the Potrero station; and that from section 4 to the Islais Creek station. The North Beach station and the Islais Creek station are those for which bids are being asked.

The plant is divided into a number of contracts, one of which will be for the incinerating plant proper, and others will be for the foundations and for the buildings for containing the plants.

With the exception of kitchen refuse used to feed hogs and chickens, manure for gardens on the peninsula, and dead animals used by the works of the Standard Manufacturing and Supply Company for fertilizing, all the refuse collected in the city is delivered to the incinerators of the Sanitary Reduction Works at Rhode Island and Alameda streets.

The refuse was studied during the months of October 1908 to February 1909; and from the data collected during this time



MAP SHOWING REFUSE COLLECTION DISTRICTS OF CITY OF SAN FRANCISCO

was obtained the information given in the specifications. The refuse studied was that delivered at the plant of the Sanitary Reduction Works. The average number of wagon loads delivered per week day was 198, and the maximum number 214. The average measured volume of the wagons was 139 cubic feet, and the maximum was 239. The average net weight of a load was 4,400 pounds and the maximum weight 11,000. The average volume of a load was 150 cubic feet and the maximum volume 450. The weight of refuse, in pounds per cubic foot, averaged about 28 in October, 28½ in November, 29½ in December, 32½ in January and 31.7 in February. These weights were obtained by weighing each load separately on a wagon scale as it was delivered to the plant of the Sanitary Reduction Works. The volumes were obtained by measuring the capacity of the wagons and estimating the excess or deficiency of the volume of the refuse contained therein. The relative quantities of ashes, garbage and rubbish composing the refuse were estimated by observation. In addition to the above quanities of refuse there were collected the following dead animals: In 1907, 1,800 horses, 120 cows, 4,200 dogs. In 1908 1,420 horses, 100 cows, 3,692 dogs. In 1909, 1,469 horses, 113 cows, 5,447 dogs.

The accompanying tables give certain other of the data collected or estimated.

A comparison of the results of San Francisco with those of the Borough of Richmond, N. Y., was added as a matter of interest.

The method of sampling and testing employed during the investigation in 1908 is described by City Engineer Marsden Manson as follows:

To find the proportions of combusible, incombustible and moisture in the refuse, and also the chemical composition of the combustible, a considerable number of samples of refuse were collected and prepared for experimental determinations. There were two general methods followed in collecting these samples.

First.—It was desired to determine the nature of the various components of the refuse, and;

Second.—To get average values for the whole quantity collected during the day.

In the first case a bucketful of about ¾ of a cubic foot of the material when homogeneous was taken, or the whole wagon load was dumped on the platform and thoroughly mixed and then divided in halves and mixed again, and this division and mixing continued until the quantity was reduced to about one bucketful of about ¾ of a cubic foot, which was taken as a representative sample of the whole load.

In the second case a bucketful of refuse was collected at random from various parts of each load just after it was dumped into the bunkers and thus somewhat mixed. These bucketfuls were then thrown together in piles, two piles for each section of the city from which the loads were collected. At the end of the day these piles were then mixed and divided until the quantity was reduced to one bucketful of about ¾ of a cubic foot, which was taken as a representative sample of the refuse collected from the corresponding section of the city during the day. These bucket samples were then dumped on a table and chopped up and mixed and divided until the quantity was reduced to about one quart of finely chopped material, which was put in a Mason fruit jar and sealed to prevent the evaporation of moisture until the drying experiment was made. The large pieces of incombustible material in the bucket samples, such as metal, glass and stone, were thrown out, weighed and compared with the original weight of the bucket sample, and this proportion was used as a correction in the final estimate of the composition of the refuse.

Most of the moisture was evaporated from the samples in a common sheet iron baking oven over a coal oil stove. The quart samples were put in baking tins and left in the oven until there was no reduction in weight for three successive weighings. The temperature of the oven was kept at about 220° Fahrenheit. Most of the samples were dry in about fifteen hours, and by this means about 99.6% of the contained moisture was evaporated.

The samples were then again sealed up in the Mason fruit jars and sent to the chemical laboratory of the University of California, where experiments were made by Dr. Vaygouny, under the direction of Prof. Edmund O'Neil, to determine the percentage of incombustible in the samples and the moisture still remaining in them and also the proportion of carbon, hydrogen, oxygen and nitrogen in the combustible.

Based presumably upon a study of these analyses an assumption was made that the refuse to be treated will contain on an average not more than 1,000 pounds of water nor less than 460 pounds of combustible matter per ton of refuse delivered to the incinerators; and the contract and guarantees of the bidders

Data Concerning San Francisco Refuse

Showing the average daily deliveries of refuse at the plant of the Sanitary Reduction Works for each month of the years 1907, 1908 and 1909.

MONTHS	AVERAGE DELIVERIES, IN TONS PER WEEK DAY		
	1907	1908	1909
January	389	463	476
February	401	497	472
March	402	480	441
April	400	428	435
May	367	418	403
June	333	386	423
July	333	374	406
August	362	407	477
September	355	438	472
October	437	433	497
November	368	428	513
December	450	448	515
Average daily deliveries for the year	383	433	460

The percentage by volume and weight and the unit weight of ashes, garbage and rubbish in the refuse collected from the entire city.

	Estimated Percentage, by Volume	Estimated Unit Weight, in Pounds per Cubic Foot	Estimated Percentage, by Weight
Ashes	8	41	10
Garbage	34	41	46
Rubbish	58	22	44
Total refuse	100	30.1	100

Computed from data obtained from the analysis of samples collected from the entire city on the dates indicated, showing the unit weight of refuse, the percentages of moisture and of combustible and incombustible materials contained therein and its heating value as determined from data obtained by a bomb calorimeter.

DATE	Unit Weight of Refuse, in Pounds per Cu.Ft.	Percentage of Combustible in Refuse, by Weight	Percentage of Incombustible in Refuse, by Weight	Percentage of Moisture in Refuse, by Weight	Heating Value of the Combustible, in Refuse, in B.T.U. per Pound	Heating Value of Refuse as Collected, in B.T.U. per Pound
Dec. 7, 1908	31.1	22.65	26.45	50.90	10,836	2,457
" 10	29.5	22.46	25.37	52.17	10,540	2,352
" 17	27.0	23.34	29.53	47.13	10,588	2,481
" 29	29.6	23.06	27.71	49.27	10,330	2,388
Jan. 28, 1909	32.2	23.16	28.37	48.47	10,230	2,366
Average	29.7	22.9	27.2	49.9	10,530	2,410

Comparing the Borough of Richmond, New York, September refuse with the San Francisco refuse as regards heating value and composition.

	Unit Weight of Refuse, in Pounds per Cu. Ft.	Percentage of Combustible, in Refuse, by Weight	Percentage of Incombustible in Refuse, by Weight	Percentage of Moisture in Refuse, by Weight	Heating Value of the Combustible in Refuse, in B.T.U. per pound	Heating Value of Refuse as Collected, in B.T.U. per Pound
*Sept.—N. Y.	32.0	30.48	33.69	35.83	10,710	3,265
San Francisco.						
Section I.	33.4	22.0	31.5	46.5	11,040	2,425
Section II.	28.9	26.6	24.3	49.1	10,150	2,709
Section III.	28.4	21.8	26.8	51.4	10,631	2,312
Section IV.	36.3	21.1	32.9	46.0	10,700	2,247
Average—S. F.	29.7	22.9	27.2	49.9	10,530	2,410

* From page 361 of the Transactions of the American Society of Civil Engineers, Vol. LX, 1908.

Comparing the combustible materials in the refuse collected from various sections of San Francisco with the combustible materials in the refuse collected in the Borough of Richmond, New York.

	Percentage of Carbon in Refuse, by Weight	Percentage of Hydrogen in Refuse, by Weight	Percentage of Oxygen in Refuse, by Weight	Percentage of Nitrogen in Refuse, by Weight
*Sept.—N. Y.	17.10	2.12	10.00	1.26
Section I, S. F.	13.1	1.7	6.7	.5
Section II, "	15.2	1.8	9.0	.6
Section III, "	13.4	1.6	6.3	.5
Section IV, "	13.0	1.4	6.2	.5
Average, S. F.	13.9	1.7	6.8	.5

* Computed from data given in tables on pages 352 and 404 of the Transactions of the American Society of Civil Engineers, Vol. LX, 1908.

are to be based upon such assumption. Provision is made, however, for a limited variation from this standard, the pounds of combustible matter being given a range between 400 and 520 pounds and the pounds of water per ton a range between 900 and 1,100. The bidder is to guarantee the net cost per ton of incinerating the standard refuse of 1000 pounds of water and 460 of combustible; also to name the amount by which "he directs his guaranteed net cost per ton of incinerating refuse be decreased for each pound of combustible per ton contained therein exceeding 460 pounds," and also the amount by which the cost is to be increased for each pound of combustible less than 460. He will also name the amount by which the cost will be decreased for each pound of water less than 1,000 and that by which it will be increased for each pound of water exceeding 1,000. The bidder will also guarantee the number of pounds of standard refuse which will be incinerated per square foot of grate area; also the probable gross rate of evaporation in the boilers from and at 212 degrees.

The lowest bid will be considered to be that which shows the minimum annual cost of plant, such annual cost being obtained as follows; To 10 per cent of the total amount bid for furnishing and erecting the plant (this being assumed to represent the annual fixed charges) will be added the annual operating cost of incineration as guaranteed. This annual operating cost will be estimated to be 40,000 times the guaranteed net cost of incinerating one ton of average refuse.

At the completion of the plant and before payment an elaborate test will be made to determine whether the plant shall be accepted from the contractor; and if it is, how much shall be paid for the same. It has been shown how provision is made for allowing for variation in the composition of the refuse. The expenditures entering into the cost of operation are those for labor and power used from the time when the refuse has been dumped or thrown from the wagons, to that when the clinker and ashes have been delivered at least one foot outside the walls of the incinerator building; the cost of labor being figured at $4.50 for engineers, $3.50 for feeders, stokers and clinkers, and $3.00 for laborers; in each case for a day of eight hours. The refuse will be weighed, after which the contractor may pick out iron scraps or other material that can not be incinerated, their weight being deducted, but the expense of picking out the scraps not being included in the cost of operation. The quality of steam generated in the boilers will be measured and also that used in connection with all operations of incineration, the former being taken as the weight of feed water and the latter being measured by a self-recording St. John meter. The net amount of steam will be credited to the contractor at the rate of 4 cts. per 100 pounds evaporated from and at 212 degrees.

In calculating the bonus to be paid or the damage to be charged to the contractor, the difference between the guaranteed net cost and the actual net cost of incineration will be limited to 8 cts. per ton. The bonus or damage will be obtained by multiplying the difference between guaranteed and actual cost in cents per ton by 120,000, this being assumed to be the number of tons of refuse which will be incinerated in three years at each plant. If the average net cost exceeds the guaranteed cost by 8 cts. or more per ton the city may reject the plant altogether and order its removal. Should the contractor and the city disagree as to the adequacy and correctness of any of the tests, each shall appoint a representative and these two shall appoint a third; and the three shall make a sufficient number of further tests to determine the doubtful capacities of the plant, and their decision as to such capacities shall be final and binding on the contractor and the Board of Public Works.

The incinerating plant will consist of appliances for handling the refuse, furnaces, including an equipment for burning fuel oil and a system of forced draft, appliances for handling clinker, boilers, electric light and power equipment, the necessary ducts, etc. for ventilating the building, machinery for crushing clinker and compressing scrap iron. On reaching the plant the wagons carrying the refuse will be driven upon a wagon scale of ten tons capacity. The driveway where all refuse is dumped is to be at least 30 feet wide outside the guard rail over which the wagons are dumped. The refuse will be dumped into hoppers or containers which are at least 8 feet wide and 10 feet long; which containers will then be conveyed by track or derrick to a suitable storage place, from which they can be run or swung above the furnace openings and discharged through the same. There will be a sufficient number of containers and place for storing them to permit the holding of 65 tons, or 4,500 cubic feet, of refuse for each of the 60-ton units in each plant.

The furnaces are to be designed by the bidder, but general specifications are given, such as thickness of walls, fire brick lining, strength of construction, etc. Special emphasis is placed upon the necessity of having the covers of the feed holes close tightly and be sealed when closed, so that no obnoxious or highly heated gases can escape from the furnaces. Other requirements are that "during clinkering the capacity of each unit must not be reduced more than 25 per cent. There shall be at least four grates to each unit." "Each furnace shall be provided with a sufficient number of cleaning or clinkering openings, giving easy access to the grate. These openings shall be closed with substantial doors, preferably of the guillotine type, lined with fire brick, and arranged to clamp substantially air-tight. — — — Openings for the removal of ashes shall be closed air-tight by suitable doors. On account of the occasional use of fuel oil, sufficient number of the doors in the furnaces and combustion chambers shall be constructed so that they will open automatically in case of explosion of gases inside the furnaces or combustion chambers." It is apparently intended to provide for the use of fuel oil in starting up the furnaces, and also as auxiliary fuel in case the refuse at times cannot maintain as much steam as is desired. It is provided that each of the units have two burners placed at the ends of the furnace in such a manner that the flames will pass over all the refuse on the grates on their way to the combustion chamber.

From the time the refuse is dumped into the containers it is to be transported and handled mechanically, and it is specified that the appliances must be so constructed that no refuse will be spilled and the appliances themselves can be cleaned conveniently. There are to be no stationary bins or other places for storing refuse.

The air for combustion will be drawn from inside the building through ducts which will take the air from a point at least 12 feet above the highest operating platform, thus causing a continuous upward movement of the air in the building, fresh air being drawn in from the outside at the bottom. This air is to be drawn into the ducts and fed to the fire by centrifugal fans on steam jets, of which there is to be at least one for each unit. The ducts will be of galvanized iron supplied with adjustable dampers.

The air before entering the grates is to be pre-heated by the heat of the waste gases from the boilers so that its temperature shall be not less than 400 degrees F. as it leaves the pre-heaters. The clinker and ash also shall have their heat returned to the furnace before being removed from the building.

The products of combustion will pass through a combustion chamber, which will insure complete combustion of the gases and will provide suitable space for the collection of dust, also for the incineration of large animals; and from the combustion chambers they will pass through the water tube boilers and pre-heaters and thence into and through the chimney. There will be by-pass flues and suitable valves so arranged that the products of combustion may be passed from the combustion chamber directly to the chimney, except that a portion will always pass through the air heater to heat the air supply.

Mechanical conveyors will carry the clinker from the ash pit to crushers having a capacity of at least 3 tons per hour for each unit. The clinker on its way to the crusher will be weighed on a platform scale. The clinker crushers will be operated with electric motors and will have a capacity of

crushing 50 tons of clinker per day for each 60-ton unit. There will also be bins permitting of the storage of two tons of clinker from each unit, to be used in case of stoppage of the crusher or when required for other reasons. From the crusher the clinker will pass through three revolving screens having meshes of ½ inch, 1½ inches and 2½ inches, respectively. There will be at each plant presses for baling scrap iron and tins and even larger pieces of metal, and arrangements for removing to the baling presses any large incombustible refuse such as wire mattresses and ash cans.

There will be for each unit one boiler of the water tube type with a total effective heating surface per boiler of at least 1,700 square feet, designed for a working pressure of 180 pounds per square inch. The boilers will be furnished with superheaters and the latest and most complete outfit of emergency stop check valves, safety valves, steam gauges, etc. The steam not used directly in the incinerating apparatus will be conducted to an adjoining room or building where it will operate an electric generating plant. For the present, however, the surplus steam will go to waste through a suitable blow-off valve located outside of the building. There will be in each incinerating plant an electric lighting and power plant of sufficient size to light the entire building and operate the machinery used in the plant. Steam turbines will be used.

While none of the above is described or planned in detail by the Board of Public Works, specifications are prepared to cover as far as possible such plans as may be submitted by the bidders. The quality of cement, sand, brick, steel, etc. are specified. Among other things the factors of safety to be used in calculating the dimensions of the various materials used are specified as follows.

	Steady Stress	Variable Stress	Alternate Stresses and Shocks
Structural steel and wrought iron..	4	6	10
Cast steel, high carbon steel and bronze	5	8	15
Cast iron, brass and composition...	6	10	20
Brick and stone.....	15	25	40

In addition to the plant proper there is given a long list of instruments and implements of various kinds to be furnished, this list occupying 7½ pages, and including recording electric pyrometers, platinum-rhodium thermo-couple outfits, indicating pyrometers reading to about 2,400 degrees F., double knife-blade switches, differential draft gauges, U-tube draft gauges, CO_2 recorders, recording steam gauges, flue gas thermometers, gas pitometers, steam meters, calorimeters, aspirator bottles, gas burette, gas collecting tubes, potash bulbs, etc. Also a complete set of tools such as riveting hammers, sledges, tongs, forge, drills, wrenches, files, etc.

In connection with this contract the contractor must guarantee:

First: That no nuisance is created in the normal operation of the plants.

Second: That no odors, obnoxious gases, smoke or dust escape from the buildings or chimneys.

Third: That at no time during the normal operation of the plants the temperature in the combustion chambers, due to defects in design or construction, in the judgment of the City Engineer, and as ascertained from a continuous record during the time of testing, falls below twelve hundred and fifty (1,250) degrees Fahrenheit, and that an average temperature therein of at least fifteen hundred (1,500) degrees is maintained.

Fourth: That the residue from the furnaces under a working load of sixty (60) tons per unit per day as specified is thoroughly burned hard and is free from organic matter.

Fifth: That the flues, dust collectors, furnaces and combustion chambers are so arranged that it shall not be necessary to shut down any one unit for more than forty-eight (48) hours in any one (1) week, in order to thoroughly remove the dust and ashes.

Sixth: That the pounds of refuse per hour which will be incinerated per square foot of the grate area upon which final combustion takes place shall be not less than that stated in the contractor's bid.

Seventh: That the average cost per ton at each plant for incinerating refuse containing one thousand (1,000) pounds of water and four hundred and sixty (460) pounds of combustible computed according to Sec. 247 shall not be greater than stated in the contractor's bid.

He must also guarantee the plant against accidents due to weakness or defects which may occur within one year of the acceptance of the plant, if the same was due to defective design, material or workmanship, and must replace any defective parts.

Before making the tests the contractor must keep a fire of oil or other fuel burning for at least one month in the furnaces in order to dry them slowly, with the object of avoiding cracks in the brick work. He will pay the cost of making the tests, except that the city will pay the laborers required and will furnish engineers and attendants for making observations, will furnish the refuse, water, lighting, lubricants and fuel oil. In order to determine the actual net cost of incinerating one ton of refuse, each unit will be tested for four days of eight hours each, every unit being subjected to such a test, but only one unit being tested at a time. There will also be a 30-day test, which will include the above tests, but which will be the normal operation or run of each plant for that length of time. A test will be conducted in one or more of the units to determine the value of using oil as additional fuel in evaporating steam. This test will consist of a 4-hour run at normal capacity, but with refuse containing more water than a thousand pounds per ton or less combustible than 460 pounds. The steam efficiency will be determined by weighing the feed water supplied to the boilers, and the refuse fed into the furnaces during the time of the test.

A very important matter in the testing and in determining the bonus or damage is the analysis of the refuse fed to the furnace. To make such analysis, a "fair average sample" of at least one cubic foot is to be collected at random from each wagon load. When such samples have been collected throughout one day they will be combined, any large pieces being cut or broken up and the whole thoroughly mixed. This mixture will be divided into halves and one of these halves mixed and divided again into halves; and this process of mixing and halving will be continued until the sample is reduced to a quantity of about 3 cubic feet. This final sample will be comminuted until it is in a proper condition for drying. "In order to determine the quantity of water contained in the refuse before dumping into the furnaces, this sample shall be dried at a temperature of 220 degrees until no further decrease of weight is observed after a period of six hours. The difference of weight between the original and the dried sample shall determine the quantity of water contained in the refuse from which the sample was secured." After being thoroughly dried the sample will be weighed and then burned until no further decrease of weight is observed after a period of four hours. The difference of weight between the dried sample and the remaining ash will be taken as the amount of combustible contained in the refuse from which the sample was secured.

This matter of sampling the refuse is a most difficult one. To select one cubic foot of material from a cart load of refuse which shall represent the average matter contained in such cart load is a very difficult matter, even with the exercise of the greatest judgment and after long experience. Such a cart load will probably have been filled by dumping in a load of ashes here, a bundle of paper there and a can of garbage elsewhere, and probably a number of cans, wooden boxes and other miscellaneous rubbish will add to the diversity. It seems to us that in tests of this importance, and involving thousands of dollars, some method more nearly approaching accuracy could be devised, such as passing all the material through a chopping and mixing machine, after first breaking up all large objects, such as boxes, sofas, matresses, etc., and removing all metals; then taking the one cubic foot sample from each cart load as so mixed. This method would probably give rise to some offense, would be expensive, and could not be thought of as a permanent arrangement unless a special inclosed mixer be used; but it seems to us that it would give much more nearly accurate results than the method described in these specifications, which is the one commonly employed. Another difficulty in making this test is in the determination of water contents. If the cart carrying the refuse is watertight, as it should be, and there

is much garbage in the refuse, the water will settle out of the garbage to a considerable extent, and thus the refuse in one part of the cart will be drier and that in another part wetter than the average. Here again there would seem to be a demand for some more accurate method of sampling.

The specifications call for the completion of the work within 540 calendar days from the official notice to the contractor that the foundations are ready, and 450 days from such notice both plants must be ready for testing. Ten per cent of the total payment to which the contractor is entitled will be retained for one year to cover the cost of repairs, defects in design or any others due to the failure of the contractor to thoroughly fulfill his contract.

A BRIEF REPORT

WHAT is perhaps the briefest report which we have seen made by any City Engineer is that accompanying other reports of the heads of municipal departments of a Pennsylvania city, the entire report being as follows:

"Dear Sir:

"The following is an inventory of property in the engineering department." (Then follows a list of engineering and drawing instruments from "one transit" to "one straight edge").

"Respectfully,

"————————, City Engineer."

Ordinarily the City Engineer's report is the longest and most valuable—to us, at least—of any contained in the annual publications of city reports. This exception is therefore all the more noticeable.

SCHOOL IN MUNICIPAL ACCOUNTING

A CORRESPONDENCE school in municipal accounting is to be established by Herman A. Metz, ex-Comptroller of New York City, he having decided to establish a fund of $10,000 a year for three years "to make available to American cities the best principles and practice worked out in municipal accounting and reporting." The fund is to be administered by the directors of the New York Bureau of Municipal Research.

He has apparently been influenced to the donating of a fund for this purpose largely by his observation in European, and especially in German, cities of the advantages of good and uniform methods of accounting in the cities there.

One of the advantages of this is the opportunity afforded for exact comparison of cost of administration. Mr. Metz states: "As all our cities are dependent upon their ability to float their bonds, and apparently in ever-increasing amounts, it would seem only natural that bond buyers should have a means of ascertaining what financial and accounting methods are in force in the respective cities, and be able to make comparison as to credit ability, based on something more than a general legal provision as to borrowing capacity. . . . City comptrollers continually receive letters of inquiry, requesting just the kind of information which I have in mind to acquire and circulate through such an agency. To-day it is nobody's business, and nobody has either the funds or organization to give the kind of answer that ought to be given when one comptroller writes to another comptroller for information." "As every business man knows, the quantity of work performed by his employees is largely determined by the methods and conditions under which their work is done. The point is, that the only way to correct such discrepancies is to provide cities with businesslike methods of accounting and reporting that will keep the facts before the officers and the people who elect them, and do it by up-to-date and easily understood balance sheets and statements."

As an illustration, Mr. Metz states that the bookkeepers in his business establishment were doing five times as much work every day for him as an employer as others did for him as comptroller, and did not complain of being overworked at that. A method of recording and comparing the amounts of work done by the various city employees with that done by similar employees in other cities and by employees of private firms doing similar work furnishes the only sure method of determining the economy and efficiency with which municipal business is being transacted.

It is expected that Mr. Metz, on his return to this country in the fall, will proceed to put this bureau for the dissemination of correct methods in accounting into actual operation. We hope for and anticipate the most valuable results from the operation of such a bureau or school.

KENTUCKY STATE HEALTH BOARD

THE powers of the State Board of Health of Kentucky and its financial support have recently been increased by legislature, and it is expected to begin at once a more active control of the sanitary affairs of the State. On August 11 Mr. Paul Hansen, then acting chief engineer of the Ohio State Board of Health, was appointed State Sanitary Engineer of Kentucky, thus becoming the engineer of the Board of Health. The appointment took effect on September 1.

The first problem with which he expects to deal is the prevention of stream pollution by distillery wastes. This is a very acute problem in parts of Kentucky, and it is desired to find a solution which, while relieving the nuisance, will not place an undue burden upon the distillers. Following this, probably early next year, he will begin a general sanitary inspection of the State with special reference to public water supplies and sewage systems, which work he anticipates will occupy a large part of the year.

Meantime the State Board of Health has adopted four rules, the object of which is to maintain the purity of public water supplies and prevent undue contamination of streams. These will form the basis of the activities of the engineer so far as his actual control of sanitation is concerned. In addition to this, the new State sanitary engineer is made a member of the Ohio River Sanitary Commission, and it is proposed to complete the sanitary examination of that stream, which has so far been carried out from Pittsburg to Cincinnati, to accomplish which it will be necessary to raise additional funds.

The four rules which the Kentucky State Board of Health expects to enforce are as follows:

Rule 68.—No municipality, corporation, institution or person shall install or enter into contract for installing any public water supply or system of sewerage until complete plans and specifications fully describing such water supply or system of sewerage have been submitted to and received the approval of the State Board of Health.

Rule 69.—No municipality, corporation, institution or person shall make or enter into contract for making any additions or alterations in any public water supply which involve a change in the source of supply or a change in methods of treating the water for purification purposes until complete plans and specifications fully describing such additions or alterations have been submitted to and received the approval of the State Board of Health.

Rule 70.—No municipality, corporation or person shall make or enter into contract for making any additions or alterations in any system of sewerage which involve a change in the outfalls or change in the methods of disposing of the sewage until complete plans and specifications fully describing such additions or alterations have been submitted to and received the approval of the State Board of Health.

Rule 71.—No corporation, institution, or person shall adopt a site for the location of any manufacturing or other industry which produces putrescible or otherwise objectionable liquid wastes until said site is approved by the State Board of Health, or unless some method for adequately purifying such wastes, satisfactory to the State Board of Health, is to be used.

SEWER MAINTENANCE IN SOMERVILLE

THE city of Somerville, Mass., had, at the end of 1909, 100.27 miles of sewers, of which something over 6 per cent were private sewers. Storm drains comprised 6.566 miles of the total. The maintenance of these during 1909, including cleaning and flushing, cost $2,642.58. The maintenance of the 1,565 catch basins, chiefly cleaning and flushing them, cost $7,559.28. This amounts to a little over $103.50 total expense per mile of sewer, or about $26.40, exclusive of work on catch basins. A permanent force of men and teams are kept continually at work flushing, cleaning and repairing the sewers and catch basins. About 7,000 cubic yards of deposit were removed from the catch basins and sewers last year.

FLOATS FOR STUDYING TIDES

Kinds Used by Metropolitan Sewerage Commission—Can Floats and Spar Floats—Boats Used for Following Floats Day and Night

The Metropolitan Sewerage Commission of New York, concerning the work of which an article was published in the March 23 issue of Municipal Journal and Engineer, conducted as a part of its investigation a series of studies of the tides and currents in the harbor and adjacent waters by means of floats. Three series were undertaken, one in 1907, a second in 1908 and a third in 1909. The immediate object of these experiments was to gain information as to the probable drift of sewage and other wastes discharged at different points in the harbor at different stages of tide, with the especial object of learning how long it would take such material to pass out to sea.

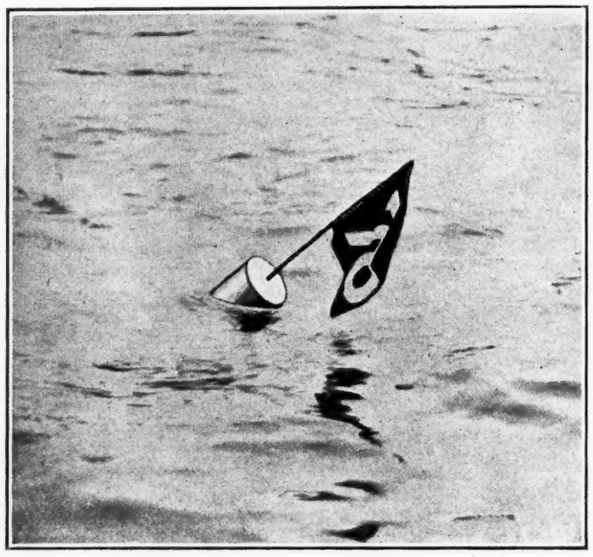
From the well-known fact that sewage discharged into salt or brackish water tends to rise and flow off at the surface it was believed that floats of moderate depth would indicate the path likely to be taken by sewage if discharged either at or below the surface. It was evident that floats, however designed, would be affected to some extent by wind. The effect of wind is twofold: First, it acts on the area of the float exposed above the water surface, and, second, it produces a general movement of the water near the surface to leeward. This movement of the surface water is a conspicuous phenomenon. By reducing the size of that part of the float which projected above the surface of the water and making the flags which it was necessary for the floats to carry as small as practicable the direct effect of the wind was reduced to a point which was considered negligible. As for the drift of the water itself, it was considered that this movement would convey sewage or other floating material quite as readily as a float, so that the value of the record in indicating what would become of sewage would not be impaired by this effect of the wind.

Points which were considered desirable in selecting the type of float to be used included the following: (*a*) minimum area of float exposed to the wind; (*b*) maximum area of the submerged portion exposed to the currents; (*c*) ability of the float to resist destruction from passing vessels; (*d*) ease with which the float could be handled from the attending boats, especially in stormy weather.

SMALL CAN FLOAT

Three types of floats were used at different times in the course of the different series of experiments.

Can Floats.—The first consisted of two tin cylinders, an upper and a lower one connected by a wire. The upper cylinder was 5⅜ inches in diameter by 5 inches in length; it was empty and sealed and carried a small red flag on a staff set in a socket on the upper end of the cylinder. From this upper can, which in action was partly submerged, a larger can 6¼ inches in diameter by 14 inches in length was suspended by a copper wire of such length as to permit the larger can to float in the current whose velocity was to be determined. This larger can was weighted with sand until the top of the upper can was nearly level with the surface of the water. This type of float had the



SMALL CAN FLOAT IN USE
Large can was weighted with water and sand

advantages of ease of handling, ease of preparation for use, a small area exposed to wind and small cost. On the other hand, where traffic was congested—as in the East River—they were destroyed by the paddles and propellers of steamers. When required for night work they were unable to carry a lantern.

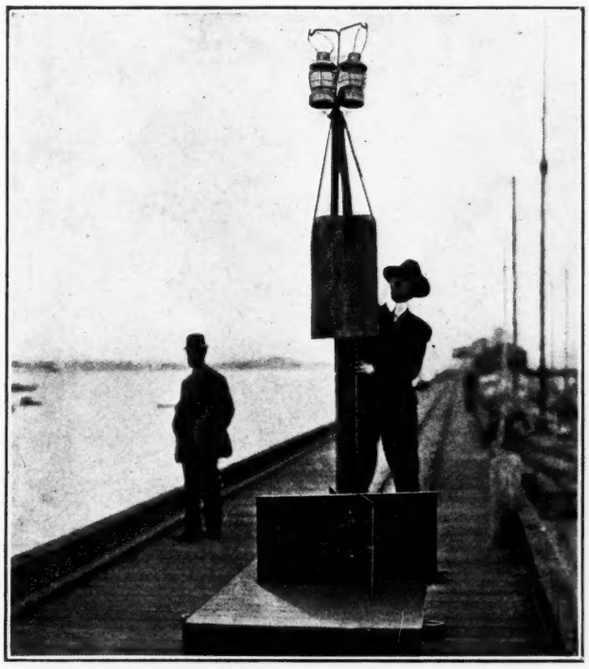
Spar Floats.—A second type consisted in a stick of timber 2 inches by 2 inches by 5 feet buoyed by a cork float at the top and carrying four vanes of sheet iron, 12 inches by 24 inches in size. The vanes were nailed to the stick and stayed by a wire which connected their outer edges. This float was readily made and proved to be effective in use. Its chief defect was that the plates were too easily bent when the float was out of water.

A third type was like the second except that it was more substantial. It was made of a 3-inch by 3-inch by 6-foot stick buoyed at one end by being built up to 12 inches by 12 inches for 24 inches from the top and weighted at the other by four vanes of No. 14 gauge iron 18 inches by 21 inches in size, secured by bolts. A ⅜-inch rod projected about 4 feet above the top and was provided with two arms from which were suspended red and white lanterns at night. As this float was heavy and difficult to handle and as the rod was easily bent, a light stiffening frame of ⅛-inch by 2-inch iron was attached to the head of the float and supported the rod just below the lantern. To this frame was welded a hook to be grappled in removing the float from the water. This design proved satisfactory for the rough seas experienced in December, 1909, in the lower bay and among the tugs, car floats and ferries of the East River.

In studying the currents, a float was cast overboard and followed by an observer in a boat. The observer determined the float's position at frequent intervals, generally by means of a sextant, but often, when near shore, by estimating the bearing and distance of the float from a known point, such as a pier or bridge. In some cases, where the distances were not too great,

an azimuth compass was used in fixing the bearing. The positions of the floats were plotted on tracings of U. S. Coast and Geodetic Survey charts, a scale of 1 to 10,000, to 40,000, or to 80,000 being adopted, depending upon the distance covered. The velocities of the currents were calculated from the times of observation and the distances scaled from the charts.

In 1907 the floats used were the 5-foot stick 2 inches square with sheet-iron vanes, previously described. These were followed by a gasoline boat during the continuance of a single ebb of flood current. In 1908, thirty-nine experiments were made, in nine of these the floats being set adrift from the proposed location of the Passaic valley sewer outlet. This year double can floats were used and were followed in gasoline launches of 30 and 46 feet in length. Usually the path taken by a float during the continuance of a single tide was studied.



LARGE FLOAT, CARRYING LANTERNS FOR FOLLOWING BY NIGHT

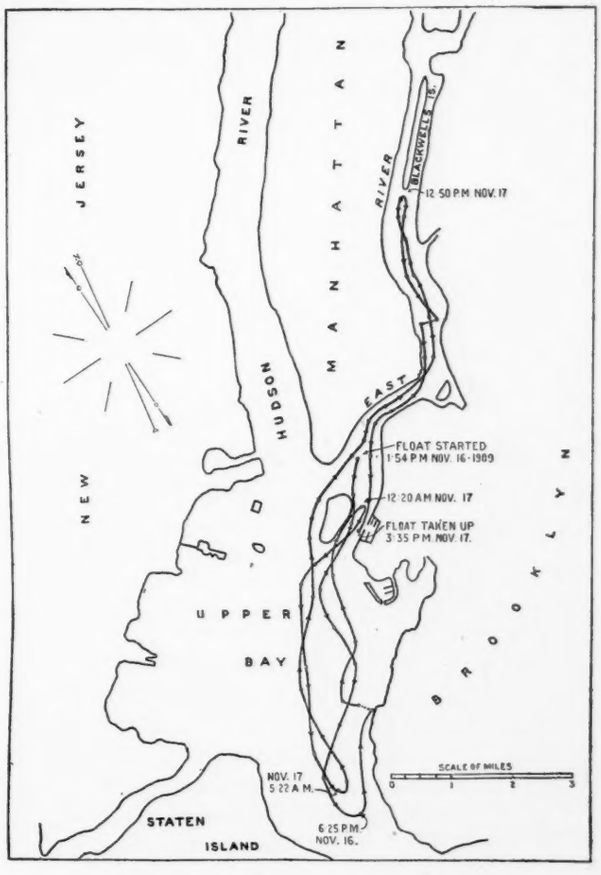
In 1909 twenty-five experiments were made in two series. In the first double can floats were used, followed by a gasoline launch. In the second series the float used was in most cases that described as the third type. These experiments were carried on night and day between November 8 and December 30. In following the floats a 62-foot steamboat and a 54-foot gasoline oyster boat were first used, with double crews in 12-hour shifts. Owing to the time occupied in going and coming the service amounted to 14 or 15 hours per day and was found too arduous, and a small launch was engaged for day use and the men worked in three shifts. Bad weather, high winds and fogs made this work difficult and it was finally decided to change the plan altogether. An 80-foot tugboat was secured with a double crew and provisions for a week and was used successfully throughout the latter part of the season with very satisfactory results. This boat could follow a float continuously night and day and no time was lost in the shifts traveling backward and forward between their homes and the then location of the float.

The details of the information obtained by these float experiments are given in full in the report of the Commission dated April 30, 1910, and recently made public. These, however, are of only local interest. Among the general conclusions reached was an apparent determination of the mean velocity of flood current in the lower East River at two miles per hour and that of the ebb current at 2¾ miles per hour; the maximum flood velocity being 6.8 miles per hour and the maximum ebb velocity being 8.6 miles per hour.

APPEARANCE OF LARGE FLOAT WHEN SUBMERGED

Lights could be followed at night without difficulty

To determine the velocity of current, double can floats were used, being set adrift from an anchored boat and the period of time observed during which the float was carried 100 feet by the current. This was done for different depths by adjusting the length of wire connecting the two cans. The velocity so determined was assumed to be that of the water at the depth of the lower can. Determinations of velocity at depths of 20 feet or more were subject to error in timing of perhaps two or three seconds when taken for velocities of over 2 feet per second, as it was not practicable to start both floats in a vertical line. The consequence was that when the top float was set adrift its motion was accelerated by a pull forward of the lower float which had already reached an advance position. This tendency was in part avoided by allowing the pair of cans to drift a short distance before timing.



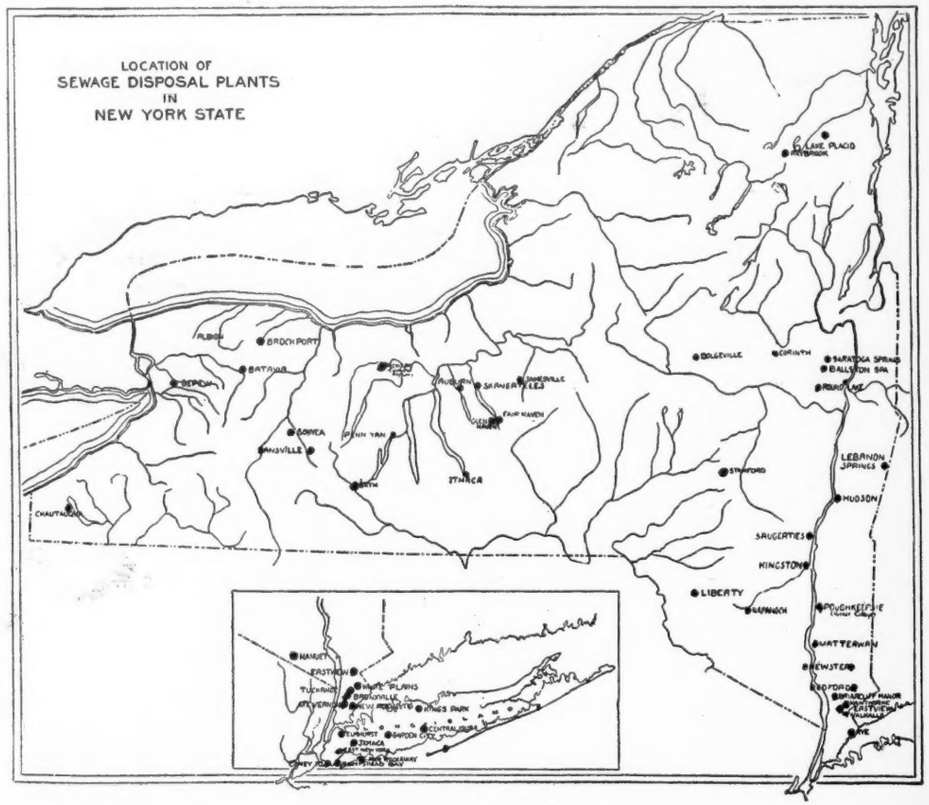
PATH OF FLOAT IN UPPER BAY AND EAST RIVER

SEWAGE DISPOSAL IN NEW YORK AND NEW JERSEY

The maps of the States of New York and New Jersey reproduced herewith illustrate the rapid increase in the numbers of sewage treatment plants, especially in the latter State. On these maps each dot represents a treatment plant which is in operation or constructed and about ready for operation. These plants serve either municipalities or large factories. There are besides these numerous small plants serving private residences, schools, etc. It is very apparent from an inspection of these that the State of New Jersey is far ahead of New York in the number of its plants. In fact, we suppose there is no State, unless perhaps Massachusetts, which has a greater number of such plants than the State of New Jersey.

The places in New Jersey credited with plants are: Newton (2), Ridgewood, Delford, Overbrook, Newark City Home, Caldwell, Essex Fells, Carlstadt, East Rutherford, Soho, Morris Plains (2), Morristown, Washington (2), Chancewater, Glen Gardner, Chatham, Westfield, Garwood, Aldene, Plainfield, Reformatory, Flemington, Princeton (3), Jamesburg, Red Bank, Water Witch, Lawrenceville, Trenton (3), Freehold, Deal Beach, Allenhurst, Interlacken, Loch Arbour, Asbury Park, Bradley Beach, Ocean Grove, Avon, Belmar, Spring Lake, Manasquan, Point Pleasant, Lakewood, Bordentown (2), Roebling, Burlington (2), Riverside, Pemberton, New Lisbon (2), Brown's Mills, Lakehurst, Moorestown, Merchantville, Collingswood, Haddonfield, Oaklyn, Woodlynne, Woodbury, Wenonah, Asyla, Woodstown, Vineland, Millville, Pleasantville, and Stone Harbor.

Those in New York are: Albion, Brockport, Batavia, Depew, Chautauqua, Sonyea, Dansville, Penn Yan, Bath, Auburn, Jamesville, Skaneateles, Fair Haven, Glen Haven, Ithaca, Lake Placid, Raybrook, Dolzeville, Corinth, Saratoga Springs, Ballston Spa, Round Lake, Stamford, Lebanon Springs, Hudson, Saugerties, Kingston, Liberty, Napanoch, Poughkeepsie, Matteawan, Brewster, Bedford, Briarcliff Manor, Hawthorne, Eastview, Walhalla, Rye, Newark, Nanuet, Tuckahoe, Mt. Vernon, White Plains, Bronxville, New Rochelle, Elmhurst, Jamaica, East New York, Far Rockaway, Coney Island, Sheepshead Bay, King's Park, Central Islip, and Garden City.



MAPS OF NEW JERSEY AND NEW YORK, SHOWING SEWAGE TREATMENT PLANTS. EACH DOT REPRESENTS A PLANT OF SOME SIZE

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Contributions suitable for this paper, either in the form of special articles or of letters discussing municipal matters, are invited and paid for.

Subscribers desiring information concerning municipal matters are requested to call upon MUNICIPAL JOURNAL AND ENGINEER, which has unusual facilities for furnishing the same, and will do so gladly and without cost.

SEPTEMBER 7, 1910.

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Municipal Ownership

As compared with a few years ago, little is seen in the public press of to-day concerning the matter of municipal ownership; but among municipal officials the subject is still an important one, and in individual cities it comes up from time to time as a subject of most absorbing interest. We are continually being reminded of this by receiving from time to time requests for information as to how many cities own and operate water works, electric light plants and other utilities, and our advice as to the desirability of such municipal ownership.

There is nothing mysterious about municipal ownership, nor should there be any difficulty in understanding when such ownership is or is not successful. The measure of such success should be in terms both of efficiency of service and of cost, the former being generally the more important. The conditions which will secure or militate against such success, however, are not so easy to understand or recognize. The too common mode of endeavoring to decide whether or not to adopt municipal ownership is to learn in how many cities it is practiced; which inquiry is too seldom supplemented by the additional one—how successful have these plants been? Seventy-four per cent of the cities of over 30,000 population have municipal water-works plants, according to the latest census report. Also, according to this report, less than ten per cent of these have operated at a profit. Those who ask simply the first question would find the evidence greatly in favor of municipal ownership. Those who ask the second also would be greatly discouraged against it if they should look no deeper than this mere statement, and make financial success the touchstone. We have always maintained that the books of a water department and its finances, including the arrangements with the other departments of the city, should be such as to show clearly whether or not the water department was operating at a profit. But in the majority of cases this is not done, and the city receives a great many benefits from the department which do not appear on the ledger. These may be in the form of public use of water for which no payment is made, low rates for private consumption, general fire protection, and possibly others, for which a private company would be paid and for which a municipal department should receive credit. Many reports of municipal plants would take on another complexion were this done.

Theoretically a municipal plant should give better service and at less cost than a private one. Better service, because the necessity of earning a dividend is not always present before the manager, and he can, for instance, lay extensions before they will be remunerative and in other ways seek the public benefit rather than the department's gain. On the financial side, the city can float bonds cheaper than a private company; should be able to obtain supplies somewhat more cheaply because being a larger purchaser, and would have certain other advantages. Practically, it is found that these advantages are largely offset if not greatly outweighed by disadvantages, the greatest of these being that of politics; others being "eight hour" and "standard rate of wages" laws. Given, however, a good manager with a perfectly free hand to employ and discharge whom he will, and we believe that it has been demonstrated time and again that a municipal plant can be operated just as efficiently and economically as a private one, with the additional advantage that it is under the direct control of the citizens and can be operated to their advantage provided only they and their managers know just what *is* to their advantage.

The incubus of politics may make itself felt either in the form of control of employees, or in a direct effort to use the plant for private gain regardless of effect upon the municipal property. No kind of public appliance can be operated successfully where the latter condition obtains; but where it is a matter only of favoritism in the employment of common labor, plants where no great amount of such labor is employed may not be fatally handicapped. Water works afford one illustration of this, the expenditure for common labor in these forming a comparatively small portion of the entire expense. On the other hand, in such work as street cleaning, where practically all the expense takes the form of wages, the reverse is the case, and the cost is usually much higher than would be tolerated by a contractor or other private individual.

There are, of course, other considerations affecting the decision, such as the ability of the city to raise the funds necessary for constructing a plant, the risk involved in constructing and operating it, the latitude which State and municipal laws allow the city in conducting such business operations, etc. In general we would say that if a city government is fairly free from the dominion of politics there would seem to be no good reason why it cannot engage successfully in any public service which is to a greater or less extent a public monopoly; but that the probability of success diminishes as the apportioning of the expense of operation increases on the side of common labor and decreases on that of the skilled artisan or scientific expert.

NEWS OF THE MUNICIPALITIES

Current Subjects of General Interest, Under Consideration by City Councils and Department Heads—Streets, Water Works, Lighting and Sanitary Matters—Fire and Police Items—Government and Finance

ROADS AND PAVEMENTS

Oiling Dirt Street

Akron, O.—Akron has been experimenting in the line of oiling unpaved streets and the experiment so far has proved a great success. So far 10 streets have been oiled this summer. The cost to people owning property on the streets has been 2½ cents per square yard. A few of these 10 streets will be oiled twice during the first year. After that it will not be necessary to oil them more than once a year. "So far we have found that the oiling of streets has been very satisfactory," said Director of Public Service John W. Gauthier. "In the first place it does away with dust and it also keeps away the flies and mosquitoes. Oiling of streets keeps the earth from being washed away. We have oiled 10 streets so far. I look for many more to be oiled next summer."

Report of Creosoted Block Pavement

Cincinnati, O.—The creosote oils required in wood-block street improvements by the new city specifications are less satisfactory than those required by the old specifications. This is the substance of a report just made by the Bureau of Municipal Research to an organization of property-owners on Rose Hill and Beechwood Avenues, by which the bureau was employed to inspect the street paving and make a report. The contract under which the work was done was the first under the new specifications. The report says in part:

Early in the work some old blocks poorly treated were delivered on the street, apparently to be cut on a bevel for starting courses, but we objected and they were not used. We tried to inspect the manufacture of the blocks at the plant in Indianapolis, but were refused admittance by Mr. Reilly, president of the Republic Creosoting Company. However, we took some blocks from the street and sent these to Chicago. The chemists reported that, as near as they could tell, the original oil used probably met the specifications, but they state that they did not make a determination of free carbon because such a test would have no value on an oil extracted from a treated wood block. The fact that a chemist cannot definitely detect this difference in the oil when the blocks are once treated merely emphasizes the contention of the Bureau, that the city is not justified in paying $12,805.50 for this slight difference. The blocks tested contained more than the requisite amount of oil, 20 pounds per cubic foot of wood, but, in spite of this, they absorbed more water than allowed by the specifications.

In accordance with the specifications, a one-inch joint filled with "asphalt" was provided along each curb to allow for the expansion of the blocks. This is the usual allowance made for blocks treated with oil containing tar. However, it proved entirely inadequate for blocks treated with this new oil, which admittedly had never been known to have been used in any city for impregnating wood blocks before.

We believe there has been a reasonable compliance with the specifications on the part of the street contractor, and, with the exceptions noted, we consider the pavement to be satisfactory.

Iowa Good Roads Campaign

Davenport, Ia.—Governor Carroll and the members of the Iowa Highway Commission have completed their three days' inspection tour of the river-to-river road. Three hundred and eighty miles of road were covered and 17 changes were made. The trip from the Missouri to the Mississippi River was one succession of good roads meetings. Seven bands were out to welcome the party at various places, 30,000 heard members of the party talk about good roads and promised to keep up the good work, so that better roads are assured in Iowa from now on. The river-to-river road is a permanent thing. In some places it is like a veritable pavement. It has some bad spots, but it is believed these will soon be remedied. The only criticism members of the Highway Commission had to make was about the condition of the culverts. The majority of them were bad, and at each stop the speakers asked the people to replace them with concrete structures.

Abuse of Street Privileges Prohibited by City Ordinances

Dallas, Tex.—City ordinances regarding the use and care of streets, alleys and public grounds have been compiled for ready information of the public by the Dallas City Plan and Improvement League as follows:

Articles Nos. 114 and 118 forbid the depositing of the carcass of any dead animal or filth of any kind, animal or vegetable, or any tin or glass or pieces of iron in any alley or other public place. The penalty provided is from $1 to $100.

Article No. 127 forbids any person, while hauling dirt, garbage or other offensive matter or trash of any kind through the streets, to permit any of the matter to fall out upon the streets. A penalty not exceeding $100 may be imposed for violations.

Article No. 176 forbids the obstructing or encumbering of any lot, street, sidewalk or public ground with anything and in any manner whatever. The penalty is not to exceed $200.

Article No. 178 forbids the driving of a drove of animals on Main or Elm streets, between the river and Ervay street, or on any part of Haskell avenue. The penalty provided is not to exceed $25.

Article No. 184 prohibits the occupation or use of any portion of the streets as a stand for the purpose of vending fruit, candy or anything else, under penalty not exceeding $100.

Article No. 188 requires persons in charge of horses and vehicles on the streets or alleys to move them when requested to do so by the street cleaner. Refusal may be punished by a fine of from $5 to $25.

Article No. 218 makes it unlawful for anyone to sweep out or deposit any loose paper, filth or trash of any kind on any of the sidewalks or streets of the city.

Paving Creates Demand for More Paving

Fort Scott, Kan.—With the gradual extension of the street pavings over the city the public sentiment, which in the majority of cases was formerly radically opposed to it, has now changed to favor the work, and instead of the complaints as of old against the paving, they are now being made because more of the work cannot be done. This was noticable at the last meeting of the Council, when property owners appeared and complained because it will be impossible to pave the streets along their property. They have learned the value of paving and want to share in it.

Municipal Paving Plant Leased

Fort Worth, Tex.—The city has leased its paving plant to the Shelby-Downard Company for $600 per year, and it is claimed that the deal will mean a saving of $1,300 per annum to the municipality. The cost of a watchman at $700 per year will be eliminated and the city has arranged with the paving company to secure all the material it needs for patching purposes.

Rewards for Good Roads

Lisbon, N. D.—Because he had the best stretch of road in the county, Carl Krueger, of Shenferd Township, received a prize of $100 from the Ransom County Good Roads Association. Edward Seelig, of Casey Township, won the second prize of $60 and John Cresswell, of Green Township, won the third prize of $40. The competition was open to all road overseers in the county, being inaugurated by the association for the purpose of arousing interest in the making of better roads. There were numerous entries this year and next season the same plan will be followed out.

Michigan County Builds Own Roads

North Freedom, Mich.—The work in South County is unique in Wisconsin, in the fact that the whole work is done by the county forces with county-owned machinery. The county now owns three very complete road-building outfits and has developed a trained force of employees with each outfit, who build the roads in accordance with the best modern ideas. All roads are surveyed and planned by the State Highway Department before construction is undertaken. Last year a total of five miles of road was built in eight towns; during 1910 about ten miles will be built in 15 towns, and during 1911 the demand is for even more construction.

Recipe for Building Gravel Road

Hartford, Conn.—R. S. Hinman, Fishers Island, has written a letter to the Times, telling how to build a gravel road so that it will last 20 years—as did one which he built in Oxford. The recipe is as follows:

Having selected the road to be improved, if it is sandy wait till late in the fall or early spring. With teams enough to keep a man raking, without wasting too much time, cart the first load as far as you think can be graveled in one day and dump it. With a potato hook the cobbles should be raked back into the wheel ruts and center of the road on the one-horse track. The wheels of the succeeding cart should strike the gravel of the first load before it is dumped. This will cover the cobbles, raked back from the preceding load, and the driver should be instructed not to turn about on the gravel but drive straight over it with his empty cart. At night you will have this piece partially packed. The next day, driving over it with full carts will, if the gravel is damp, as it should be, pack the wheel tracks as hard as macadam. Outside the wheel tracks a ridge of loose gravel will be thrown up that should be at once thrown into the middle of the road. You may be scared a little. A friend of mine, driving over a road that I had just finished, said it was like a hog's back. He was pretty nearly right. Inside a year another friend, driving over the same road, thought a little gravel, right in the middle, would be an improvement. He was quite right. I have forgotten how many years ago that road was built or improved, but except for places where it has worn down in hollows so that water stands it is still good, and the town of Oxford has not, to my knowledge, spent a cent on it. In case of a sand road, cobbles three inches in diameter may be safely raked back and covered. A neighbor of mine passing, as the raking I have described was being done, called out to the man with the rake: "For God's sake, throw out them stuns." If any one cares to spend a little time hunting for "them stuns" when a road has been in use for many years I will lend him a pick, but they act as a binder, and when they are properly put in and covered and running water kept off the road no man that saw them covered will see them again. Cobbles larger than three inches in diameter should be raked to the sides of the road close to the track, to kepe fools from driving with one wheel sunk six inches in sand and the other on a beaten track. You can hardly blame any one that sees that work has been done on a road for thinking it has been "worked" and shunning it, but when the work is done as I have describe it it is fit for use, even while the work is going on.

In case of mud the work is the same and the time to be chosen when the mud is deepest. Where the mud is nice and deep and a wheel will sink half way to the hub the first stones may be large, as large as will sink out of sight. Cover these with smaller cobbles until the surface is reached. Put a little gravel over to smooth things, and when you see people digging the soil out for two or three feet and carting stones to fill the trench make a memorandum of the time and see whether your cheap road does not stand without repairs longer than the expensive one. Don't ask me why stones thrown into mud and allowed to bed themselves will stand frost and stay put. Try it, and, satisfied of the fact, see if you can tell the why.

Council to Try Out Concrete Pavement

Sioux City, Ia.—There is a marked disposition on the part of the City Council to make an extensive experiment with concrete paving in the new work now being planned for next year. An informal conference was held with City Engineer Gaynor following the Council meeting last week and the question of material was considered, in addition to the distribution of the new work. It was emphasized by the City Engineer that the concrete paving should be considered only as a temporary improvement and that the plans should lead to it being eventually used as a base for regular brick paving. The economy of the concrete idea is one of the principal features cited in its favor, as a five-inch road dressing is said to prove sufficient for all ordinary purposes.

Tar Macadam for Bridge Roadway

Washington, D. C.—As there was not sufficient money available for an asphalt roadway on the Connecticut avenue bridge, Captain Mark Brooks, Assistant Engineer to the Commission, decided to lay tar macadam. This has been done at a cost of about 20 cents above the cost of ordinary macadam. It is figured that a new application of tar, possibly with some stone screenings, will be needed after two years. Asphalt oil and tar will be applied to a number of roads, such as the Park road west of Seventeenth street and the Military road. The treatment will cost about 6 cents per square yard. Sprinkling these roads would cost from 4 to 5 cents a year.

SEWERAGE AND SANITATION

Use of Common Drinking Cup Prohibited

Boston, Mass.—The State Board of Health has sent out notices to each local Board of Health regarding the enforcement of the new law against the use of common drinking cups at public fountains:

On and after October 1, 1910, it shall be unlawful to provide a common drinking cup:

(a) In any public park, street or way.

(b) In any building or premises used as a public institution, hotel, theater, public hall or public school.

(c) In any railroad station, railway station, railroad car, steam or ferry boat.

Great Improvement in Supply of Milk

Columbus, O.—The increasing purity of Columbus milk is believed by city health officials to be largely responsible for the better condition of health generally, and especially among children, that now prevails throughout the city. The records of the City Bacteriologists show, during the last few years, a big lessening in the amount of bacteria found in milk. In fact, for the last three or four years the number of bacteria has been found to diminish by half each year, thereby denoting a yearly doubling in the actual purity of the milk. The campaign of the Health Department in the interests of pure milk is constantly progressing, and a corresponding increase in the purity of milk is expected before another year passes.

Town Adopts Sanitary Ordinance

Corpus Christi, Tex.—The City Council has adopted a health ordinance devised to regulate and render sanitary slaughter pens, dairies, fish houses, markets, hotels, restaurants, boarding-houses and other institutions of public character. The ordinance is set forth in a number of clearly stated rules governing the institutions noted, and providing, in some cases, for their inspection at regular intervals. The ordinance is especially direct in dealing with slaughter houses, which have frequently been reported in bad condition the last few weeks. Carried out to the letter, the rules governing abattoirs will render them almost as cleanly and inviting as grocery stores. In order to further protect purchasers, the ordinance requires that all meat sold in the city limits be slaughtered in accordance with its provisions. The test for tuberculosis is made obligatory by the ordinance.

Kansas City, Kan., Residents to Boil Water

Kansas City, Kan.—"Boil your drinking water, no matter what kind it is." That is the order of Dr. Farquhard Campbell, Health Officer of Kansas City, Kan. He says that the water is full of typhoid germs and that the cistern and well water is worse than the river water furnished by the city. "There is more typhoid in the city than there has been for some time," he said last week. "The sewer system of the city was built for a city of about 15,000, and now is out of date. In some places sewers built of tile pipe that has leaks cross ponds. There is always typhoid about these places. If people will boil the cistern and well water they need fear nothing from typhoid."

Hydraulic Power for Sewage Screens

New Bedford, Mass.—The intercepting sewer is developing many problems the more it is being looked into, and not the least is that of how the screens for filtering the sewerage in the screen house at the end of Clarks Point are to be operated. In similar screen houses in Boston and other places steam power is relied upon to do this work, but City Engineer William F. Williams believes that hydraulic power can be utilized more profitably, and he is working out a plan along these lines. The screens that are to filter the sewerage are huge iron cages, open on one side and with the other three sides consisting of iron rods an inch and a half or two inches apart. When the cage is in place it is in the course of the sewerage as it enters the big conduit which takes it out into the bay. The large pieces of paper, wood, etc., are caught by the screen and held in the cage until they are to be disposed of by the screen house operatives. Every two or three hours each of the screens is raised, and the contents are emptied out and burned.

Water Flows Up Stream

Youngstown, O.—The phenomena of a river running up stream is probably observable nowhere else than in Youngstown. This sight has been witnessed here before in dry seasons, but never in such a pronounced manner as during the past few weeks. Just above the East End bridge the Republic Iron & Steel Company has built a temporary dam to retain sufficient water to keep its mills in operation. Crab Creek flows into the river just below the dam, and by

Courtesy Youngstown Telegram

Crab Creek empties into the Mahoning River just below the dam and the flow is in part diverted upstream through the break in the dam by reason of the low stage of the river.

the law of gravity should run down stream, but so low has the stage of the river become that a gap has been opened in the dam and the flow from the creek, attracted by the pumping power from the Republic works, flows up stream instead. Paradoxical as it may seem, the water ripples down hill in running up stream. The need of a more stable water supply for the city has never been more fully emphasized than at this point. Just below the above-mentioned dam the river has narrowed to a width of less

Stage of the river below the East End bridge. Only the flow of sewage and polluted water from Crab Creek keeps the stream from drying up.

than 10 feet, while below the bridge it has dwindled to two ribbon-like streams, across which a man might step. At this same point during the high water of last February the river was more than a quarter of a mile in width and mills were forced to shut down by reason of high water. The main sewer of the city empties into Crab Creek just a few feet above the point where the creek flows into the river, which means that an enormous mass of sewage is drawn up stream and disseminated. The portion of the sewage that escapes down stream also accumulates through the lack of sufficient water to carry it away.

Typhoid Brought Home from Summer Resorts

Washington, D. C.—"Twenty per cent of typhoid fever in Washington might be justly ascribed to conditions at summer resorts," is the statement of Dr. William C. Woodward, Health Officer. "Our inspectors make careful inquiry into every case of typhoid fever, and go carefully into the history of the person previous to being sick. How long patients were in a summer resort, what character of resort it was, what kind of milk supply and water supply it had, and what sort of sanitary arrangements it was provided with are all noted and recorded by the inspectors." Because people who go away into the country in the summer put great faith in getting back to the farmhouse and the summer boarding-house, with its fresh, green vegetables and totally inadequate sanitary features, 20 per cent more people get typhoid than would if they took great care in selecting a summer home where there is no typhoid, according to Dr. Woodward. The upward trend of the "typhoid curve" always comes with the summer boarding-house period.

Controversies Over Depth of Sewer Settled

Duluth, Minn.—The difficulty over the sewer at Lakeside between Sixty-first and Sixty-third avenues, East, was finally settled to the credit of the City Engineering Department. Twice the Board of Public Works informed the Council that the sewer was too shallow to enable part of the nearby residents to make their connections, although the Engineering Department did not concur in this opinion. Last week the Board of Public Works selected three prominent plumbers and went with them to the sewer to make an examination of it. Each of the three plumbers declared that every resident in the neighborhood could make connections. The assessment on the sewer has been held up about two years because of its alleged shallowness.

WATER SUPPLY

Well Water Worse After Rain

Dayton, O.—Though a rain purifies the air and freshens verdure, it frequently has a baneful effect upon drinking water, following a drought of several weeks' duration. Such was the statement issued at the City Bacteriological Department as a warning to residents who are dependent for their drinking water upon a well. An open spring is also likely to be contaminated. The well water tests at the City Bacteriological Department have been uniformly bad during the past drought. The uninitiated who were alarmed at the contamination revealed in these examinations would be inclined to expect a purification from a rain such as was dashed down some days ago, but the contrary is rather more plausible, according to the bacteriologists. During the drought the earth has become packed and hard, and an impalpable dust of all forms of filth has filled the air and settled upon everything. Germs of disease from all sorts of offal that are usually washed away have collected day after day and thrived in the heat. Instead of soaking them up into the earth the first rain is likely to wash off the surface all of this dirt and if it seeps into wells the results may be serious.

Schenectady Needs Reservoir

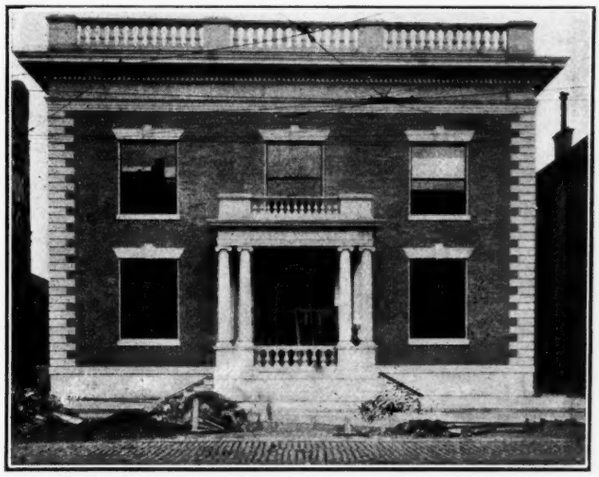
Schenectady, N. Y.—After making an inspection of the conditions, Consulting Engineer Emil Kuichling stated that in his opinion, so far as his investigation had proceeded, the only remedy or the only way to improve the water system was the building of a large reservoir. He said that Schenectady was no longer a village, but was a large and growing city, and as such the needs of her water supply make a serious question. He said that there was no room for doubt but that a new water supply must be provided, and his work was to find out what was best to be done. Referring to the question of reservoirs, Mr. Kuichling said he thoroughly agreed with the recommendations made by City Engineer FitzGerald for the building of a large reservoir system, because he was of the opinion that the days of standpipes had passed for this city. The largest amount of water that a standpipe would hold would be only about 2,500,000 gallons, and this would be but an hour's supply for the city during the hours when a large quantity is used.

Water Vein Tapped, Rendering Wells Dry

Champaign, Ill.—While cutting a deeper channel in the Mud River, a dredge struck a water vein. The water gushed up and almost at the same time all the wells on adjoining farms went dry. Fears are entertained that Urbana may lose its supply if contemplated river improvements are carried out there, because a vein of water from which the supply is taken passes under the city in places only 15 feet from the surface.

Louisville Water Company's New Home

Louisville, Ky.—The Louisville Water Company will soon occupy its handsome new home on Third street, between Walnut and Green streets. The building is being constructed of gray Roman brick and Bedford stone trimmings. It was designed by Theodore A. Leisen, Chief Engineer of the water company. Builders and architects who have seen the structure agree that it will be one of the prettiest business homes in Louisville. A great broad lobby with tile flooring is one of the features of the lower floor,



Courtesy Louisville Times

OFFICE OF LOUISVILLE WATER COMPANY

and the general arrangement is on the same plan as an up-to-date banking institution. The central lobby is 18 feet wide, with the company's offices on each side. At the left on entering the lobby are the offices of the treasurer and the assessor's department, with a private office for the chief assessor at the rear of the lobby. On the opposite side are the offices of the auditing department and the assistant engineer and the superintendent. On the second floor are the offices of the president and the board of directors, the offices of the chief engineer and superintendent, the buyers' office and the drafting rooms. The entire building is to be finished in mahogany and all of the fixtures will harmonize. The lobbies of both floors are tiled and the stairways are of iron with marble steps. The floors of the offices are of cement finish and will be covered with cork linoleum. The company has given special attention to the heating and lighting facilities, and the building will be heated with hot water. In the basement shower baths are being provided for the employees. While the contract price for the building proper is $53,000, the water company will spend in the neighborhood of $60,000 before its home is fully equipped and ready for occupancy.

Water from Two Artesian Wells Will Go Into River

San Antonio, Tex.—The flow in the San Antonio River, below Eighth street, has been increased by at least 1,500,000 gallons a day, whether it rains or not. Two artesian wells, used by the traction company at their former power plant, Ninth street, and which have been capped during the past 12 months, will be turned into the river at Eighth street at once. Pipes have already been arranged by the city authorities to connect the wells with the Eighth street 36-inch conduit of the Galveston, Harrisburg & San Antonio Railroad. The traction company officials have agreed to open the wells, and all that remains is making the proper connections with the laying of about 10 feet of additional pipe. The combined flow of the two wells represent 1,500,000 gallons a day, and for some time this water was turned into the sewers after the closing of the power plant on Ninth street. But because of the overflooding of the sewers the wells were capped 12 months ago, since which time no water has been allowed to escape. This water injected into the river's channel every day will aid materially in increasing the stream's flow through the business districts.

STREET LIGHTING AND POWER

New Wire Regulation—Voltage of Overhead Wires Limited

Boston, Mass.—Wire Commissioner Cole has made a report to the Mayor which will be submitted to the City Council, which embodies four recommendations. Two of these involve changes in the laws, and must go to the Legislature, while two provide for changes in the city ordinances. The most important recommendation is that the telegraph and telephone companies be required to put five miles, instead of two, under ground each year. Mayor Fitzgerald has long believed that the companies are well able to do this, and that the change will be for the general benefit of the city. The recommendation is in line with his suggestions in the campaign and his inaugural.

The first recommendation of Commissioner Cole, which will necessitate a new law, is for strengthening the protection to linemen and the public in general by limiting the potential which overhead wires shall be allowed to carry. Some of the wires now carry a current of 15,000 volts, and there is no legal limitation to the amount they may carry. The second recommendation, which also requires State legislation, is that the companies be required to bury five, instead of two, miles of wire each year. This may encounter some opposition from the companies, but the proposed change is made ample to allow of a compromise.

The next changes, which may be made by ordinance, are in the order of stringing wires on poles. At present the city police and fire wires are carried on the top of the poles, and the linemen, in making repairs, have to make their way through wires carrying a high potential. This increases the risk of accidents, and by reversing the order the low potential wires would be placed at the bottom. The other change recommended is that all wires be placed 21 feet above the ground. At present the law requires that wires shall not be lower than 25 feet from the ground, but the statute is habitually violated by the companies, special circumstances often making the placing of wires below the legal limit a necessity.

Improved Street Lighting in Chester

Chester, Pa.—For some months the Beacon Light Company has been busy conducting experiments in up-to-date street lighting with a view to giving the citizens of Chester the best possible illumination at all times. This extensive series of investigations was brought to a close several weeks ago and a new system of street lighting is now in very successful operation, the last changes having been made on August 19. In place of the former broad carbon arc lamps there is now in use the most modern General Electric magnetite arc lamps, and a mercury vapor rectifier of the latest type replaces the old Brush arc generators, which are still in use in most cities. The new lights are very brilliant, steady and reliable. Many pleased comments have been heard concerning the new lights, and it is evident that the Beacon Company is losing no chance to contribute to the general up-to-dateness and aggressiveness of the city. Members of City Councils and prominent business men who have investigated the new light and watched its operation have expressed much satisfaction with its improvement over the old system of street lighting.

Natural Gas System Will Be Owned by Municipality

Shreveport, La.—Members of the City Council and Chamber of Commerce representatives officially decided to have a municipally owned natural gas system for Shreveport. The employment of an engineer to prepare the route for the pipe line to the Caddo field and other preliminaries was authorized. The establishment of the plant is expected to cost exceeding $100,000.

Special All-night Lighting Service

Zargau, Silesia.—By an ingenious German adaptation of the "nickel-in-the-slot" system, the midnight revellers are made to pay for their own special street lighting. The Zargau municipality owns the electric light plant, and the street lighting, up to 10 o'clock, is paid for by local taxation. The lamps are switched off at 10 o'clock, when the automatic system comes into operation. Anybody "afraid to come home in the dark" may drop a penny into a box standing on an iron pillar. The lamps for nearly a mile along the road blaze forth and burn for 12 minutes, just long enough to let the wayfarer find his own door.

City May Construct and Rent Underground Conduit

Oakland, Cal.—To bond the city for the purpose of securing funds with which to construct an underground conduit, the interest on the bond to be derived from the rental of the duct to the Central Oakland Light & Power Company, a new concern in the local field, is the plan which City Engineer Fred C. Turner broached at a meeting of the Board of Public Works. In this manner the city would, in a measure, retain some control over the public service corporation. Turner outlined his plan, following the application of the new electrical and power concern for a permit to erect pole lines along various streets. Turner's plan was merely a proposal, and no action was taken. The application for a permit was referred to the City Electrician.

Virginia's White Way Soon Opened

Virginia, Minn.—The Great White Way will blaze in resplendent glory within a few days, according to John A. Kennedy, superintendent of the Virginia Electric Power & Water Company. The posts are all set, the necessary connections made, and as soon as the globes can be placed upon the posts the system will be lighted. The White Way covers five blocks on Chestnut street, with ten posts on each block, each post containing five tungsten lamps. The five lights on each post will burn from dusk until midnight, and one light on each post from then until daylight in the morning. When the system is in operation it will light up and show the prettiest and most substantial business street of any city on the range. The system was inaugurated by the Park Board at a cost of about $6,000, and will be maintained by the Virginia Electric Power & Water Company at a cost to the city of about $250 per month.

FIRE AND POLICE

Dakota Fire Marshal a Success

Aberdeen, S. D.—Incendiary fires are decreasing in number in South Dakota, according to the annual report of the fire marshal for the year 1909, which has just been compiled. Only seven fires were reported as being distinctly incendiary and in the previous year there were eighteen. Seven criminal proceedings were started as a result of the seven incendiary fires and seven convictions were secured. Three sentences to the penitentiary and one to the reform school resulted. All fires in the State for the year numbered 560 and the total losses were $707,991.71, which was about four-fifths covered by insurance. Following are the principal fire causes and the number caused by each: Sparks from locomotives, 49; children with matches, 42; prairie fires, 14; kerosene, 10; gas and gasoline, 34.

Need Tools Not Laws

Fort Wayne, Ind.—"What we need, gentlemen, is not more laws but more tools with which to enforce the existing statutes," Police Chief Ben H. Elliott told a knot of Councilmen after a regular session. "We have plenty of laws regulating the speed of automobiles and motor-cycles in the city limits, but the police force is handicapped in enforcing them by reason of not having any vehicles that can travel as fast as the law-violating machines do. Pass the ordinance now before you appropriating a sufficient sum to purchase two motor-cycles for the police department and I will guarantee to put a stop to this violation of the speed limit. By using these machines to chase the violators I shall be able to go into court with irrefutable evidence, a thing which I cannot do now."

Novel Way to Start Fire Department

Mount Tabor, N. J.—Although there is no fire department other than 1,000 feet of hose, no enrolled volunteers and no fire trucks, a benevolent citizen of this place has donated a fire gong to the town authorities as a starter for a department. When a fire breaks out the gong will be rung and, as usual, it is expected many of the citizens will turn out to subdue the flames. A man whose name is not divulged has been appointed to keep tabs on the men attending all the fires and who to his best knowledge are the best fire fighters. These men, it is understood, will be invited to join the proposed fire department.

Insure the Firemen

Leavenworth, Kan.—For some years it has been the practice of the city to insure the firemen against death and accident. The contract for this insurance expired and the matter of renewal came up. The insurance given is as follows: For the chief, in case of death or total disability, $5,000. In case of sickness or accident, $25 per week. For the assistant chief, $4,000 and $20 per week. For the foreman, $4,000 and $20 per week. For six firemen, $3,000 and $15 per week.

Plan Combination of City Signal Services

Los Angeles, Cal.—The possibility of combining the Police and Fire Department signal services and thereby save the city money and making both separate services more effective, was suggested to the Fire Commission by F. V. Owens, the new member of the Commission, who is an electrician. Mr. Owens told the Commission that he is now sure a consolidation would be practicable, but he was authorized to make an investigation and report to the board.

Time Clock for Village Policeman

Highland Falls, N. Y.—The village policeman will now have to ring up time clocks at each end of the town to indicate that he is right on his job at all hours of the night. A clock has been established in the Town Hall and another at the upper end of the village. The working hours are from 7 p. m. to 5 a. m. The policeman at present enjoys a salary of $50 a month, which is to be increased to $60. He is also to be uniformed.,

New Annual Inspection Program

New Britain, Conn.—The annual inspection of the Fire Department was made August 28 by the Board of Public Safety. It differed greatly from the inspections of previous years when the firemen were on review for the public. The parade and outdoor practice features were abolished as the Board desired to save the expense which such an inspection entails. The public had the same opportunity as in previous years to view the fire houses, and a number availed themselves of the privilege of looking over the well-equipped quarters. The members of the Board left from in front of the City Hall in an automobile about 2 o'clock. They were accompanied by Alderman E. W. Christ, the acting mayor in the absence of Mayor Halloran, who received an invitation to attend the inspection. The Board made a tour of the five fire engine houses and commented favorably on the conditions of all places. The firemen were all "slicked-up" for the occasion and the quarters were in fine order, and the inspection satisfied all needs.

Improvised City Lock-up.

Nicholasville, Ky.—The Nicholasville station-house, having become unsafe and unsanitary, a steel cage has been purchased and placed in the building used by the fire department. The cage consists of a square network of steel forming a room six and one-half feet square, and contains two upper and two lower bunks. It cost $93. Later another cage will be purchased and between the two a heating stove will be placed. Persons arrested for minor offenses will be confined in the cages, which are sanitary, well ventilated and comfortable. A policeman spends the nights in the fire department and attends to the needs of the prisoners.

Favor Permits for Weapons

Providence, R. I.—Police Commissioners Luther and Presbrey favor the suggestion that no persons other than those authorized by the police be allowed to carry dangerous weapons. The idea is also to restrict sales, so that only those who have obtained permits may buy.

Traffic Squad for South Bend

South Bend, Ind.—South Bend will soon have a traffic squad of police patrolmen on duty on the important downtown street crossings. The patrolmen will be instructed to see that the various provisions of the new traffic ordinance are obeyed to the letter in the downtown districts. There will be four men in the squad, each assigned to a downtown crossing. At first the men will be on duty only in the afternoons and evenings.

GOVERNMENT AND FINANCE

Bond Ruling May Affect Securities

Dayton, O.—Even if the City Council should act favorably upon an issuance of bonds for the purpose of removing the broken retaining wall at the western end of the Washington street bridge, it would be necessary for some citizen to take risk in purchasing those bonds before the improvement could be made. Thanks to the decision of Attorney-General Denman, that a city must put all bond issuances to popular vote after a city's bonded indebtedness reaches four per cent. of the valuation of its property, bonding companies are a bit wary of Dayton's bonds.

Solicitors all over the State are of the opinion that the attorney-general will soon have to change his mind and accept the time-honored interpretation of the Longworth bill. Until this is done, however, there will be a crimp in bond sales in all the municipalities of Ohio, and Dayton is no exception. The situation was pointed out by Solicitor Breene last week to Charles Hoglen, who owns property adjacent to the broken levee at the Washington street bridge. Mr. Hoglen is anxious to have a new retaining wall constructed, and will propably consent to purchase the bonds for the purpose himself.

May Recall City Commissioners

Coffeyville, Kan.—Petitions have been started to have a recall election to oust the present Commissioners. The charges as set forth in the petition, and the grounds set forth for the ouster proceedings are: First, incompetency; second, drawing salaries without providing for the same by ordinance or authority of law; third, creating unnecessary offices.

Commission Plan Adopted

Lyford, Tex.—In a special election Lyford voted to incorporate under the commission form of government, there being only one vote against the proposition. B. D. Stevenson, editor of the Gulf Courant, was elected mayor, and A. L. Stanford and R. H. Deyo were elected commissioners.

State Board Studying City Bonds

Richmond, Ind.—City Controller E. G. McMahan expects the State Board of Accounts to recommend some system by which the debt accumulated each year by city governments because of waivers on public improvements being paid before they are due can be eliminated. "The issue is a very important one," said Mr. McMahan, "and I can think of no solution unless a special man be employed to take care of waivers and bonds issued on improvements. There will be no loss to the city if every time a waiver is paid the bond to that amount is called in. Property owners taking out waivers on improvements may pay them off at any time, and pay interest only for as long as the waiver is held by them. Then the interest on the waivers cancels that on the bonds. Of course, if the bonds are not called in the interest is lost by the city. To keep tab on the waivers and bonds is a vexing problem. It probably will be taken up by the State Board of Accounts, for the question is giving trouble all over the State."

The present books in use for keeping records of bonds are very unsatisfactory, Mr. McMahan says. He is drawing up forms for some new books to be printed soon, but not many will be prepared, as the anticipated action by the State Board of Accounts, if taken, would render the books of no value. The new form includes columns for the serial number of bonds, for the bond numbers, kind of improvement, denomination of the bond, date of issue, when due, rate of interest and other memoranda. The old books were originally designed for all different bonds, but are now being used for improvement bonds exclusively.

City Treasurer's Office Has New Index System

Syracuse, N. Y.—In preparation for the giving of abstract tax searches at the City Treasurer's office a set of new index books have been put in use. The numerical index system which is in force in the County Clerk's office has been adopted. Four large volumes have been opened, the city having been divided in that number of parts for the work. Abstract Clerk Harry H. Britcher is busily at work on the new indexes. On account of the importance of the work from a financial standpoint, it is being done with the greatest possible care.

STREET CLEANING AND REFUSE DISPOSAL

New Street Flusher Tested

Decatur, Ill.—Superintendent of Street Cleaning James Lemming has made the following estimate of the cost of cleaning pavements with the new Studebaker flushing machine. Sixteen blocks were cleaned and the items of cost were:

Team and driver	$4.00
Gasoline	1.20
Lubricating oil	.30
Water (23,000 gals. at 4c)	.90
	$6.40

To sweep the same number of blocks under ordinary conditions cost the city approximately $7.00, the flusher therefore affecting a saving of $0.50 per day. The quality of the work done by the flushing machine is, of course, much better than by hand or machine sweeping.

Wagons Must Be Covered

Duluth, Minn.—Henceforth the men in the garbage business will have to use covered wagons.

They have been notified by the health department that the open carts and those which are not water tight will not be tolerated. The ordinance provides that all wagons shall be lined with metal. Many complaints have recently been made to the department of the use of these open wagons. Those who do not comply with the provisions of the ordinance will be arrested, notice to that effect having already been served upon those in that business.

Crematory Contractors Require Supervision

Lexington, Ky.—Following a number of complaints which have been received at the City Hall recently on the management of the crematory, and the manner in which garbage is being collected in some parts of the city, Mayor Skain placed the supervision of the crematory in charge of Street Superintendent E. H. Warren. The appointment is only temporary. Mayor John Skain says the crematory this year has not been a success, and that next year he will recommend that the contract for running it be not awarded to private contractors.

RAPID TRANSIT

Conductorless Pay-Enter Cars

Niagara Falls, N. Y.—Niagara Falls may soon have a miniature pay-as-you-enter car service on the Riverview line, although the matter has not been discussed to any extent by officials of the International Railway Company. A pay-as-you-enter car has been placed on the Locust street line of the International Railway Company in Lockport, and inasmuch as the experimental stage has passed, it is believed that the railway company will take advantage of the opportunity to save money by having one man in charge of cars wherever possible, instead of two men. On the new cars, which are superbly equipped with air brakes and all modern facilities, one man acts as motorman and conductor. Before the car is ready to start on its journey over the lines the man in charge collects all fares, then bars the rear door so that during the progress of the trip passengers must enter the car and leave by the front door. At the end of the lines the register is taken, and the same operation gone through as at the other end of the line. If the new cars are placed in universal use by the International Railway Company it will mean the saving of many hundreds of dollars yearly for the company.

Health Board Insists on Clean Trolley Cars

Wilmington, Del.—A thorough cleaning of all closed trolley cars as soon as they replace the open cars will be demanded by the Board of Health. For the first time in a memory Wilmington car riders will thus have their health safeguarded. Cars of the Wilmington & Philadelphia Traction Company and of the People's Railway Company will be inspected by executive officers of the board early this autumn. Cars that are found unclean and in need of repair will be noted, and the companies requested to improve them.

MISCELLANEOUS

Care of Trees in Brooklyn

Brooklyn, N. Y.—M. J. Kennedy, Commissioner of Parks for the Boroughs of Brooklyn and Queens, in his quarterly report regarding the care of trees, says:

The work of caring for the trees in the parks and on the city streets was of a varied character, confining itself principally to spraying trees, removal of dangerous trees and limbs and similar service to which pressure of the season directed.

During the storm of June 18 nearly three hundred (300) trees were uprooted. In almost every instance the species was of a shallow-rooted character, and in other respects such as this department discourages for planting. Every method was resorted to for relieving the situation so that all the trees that were either leaning against houses, obstructing traffic or in other ways dangerous were made safe within forty-eight hours after the storm.

In the eradication of insects, work on the tussock moth has been going on with zeal, but the caterpillars this year did not hatch until a month later than usual. Then they came so suddenly and fed so voraciously that within a period of three days after hatching they became full grown and changed to the pupa state. Spraying machines were therefore unable to catch them in their feeding state, and the result is that there are a great many egg masses on the trees in the heart of the city that will have to be removed by more elaborate methods before next spring. The elm leaf beetle was combatted in the suburban sections. The hickory bark borer, which killed a vast number of hickory trees in Prospect Park in former years, was this spring combatted on lines decided upon last year, and the results are most encouraging. The dead and dying infested trees were removed all through the parks, and the remainder have had their petioles sprayed, with the object of poisoning the beetle at the time it emerged from its winter quarters to bore and hide in the petiole of the leaf.

New Tree Law Proposed

Dayton, O.—Councilman Charles Phillips has taken up with the City Solicitor's department the advisability of introducing an ordinance to compel all shade trees along the streets to be cleared away to a height of 10 feet above the pavement. The Councilman believes that the ordinance which applies to awnings over store entrances should also be made applicable to shade trees.

Smoke Ordinance to Be Enforced

Covington, Ky.—The first arrests under the smoke abatement ordinance were made by Sanitary Guards Schmeing and Moore, when they summoned five locomotive engineers to appear in court as the result of a trip to the railroad yards by a committee of the Smoke Abatement League with them. Each locomotive was watched and a record made of the smoke production. The Health Department is determined to stop the smoke nuisance, which has been a bane to the life of residents in the neighborhood of the railroads for many years, and they have retained Attorneys Howard, Walker & Holmes to assist City Attorney Philipps in the prosecution of these cases. The railroads claim that they have had smoke consumers installed in all their engines and that if there is too much smoke production from the engines it is the fault of the crews. The enginemen, on the other hand, claim that they are unable to reduce the amount of smoke with the equipment and coal which they are required to use.

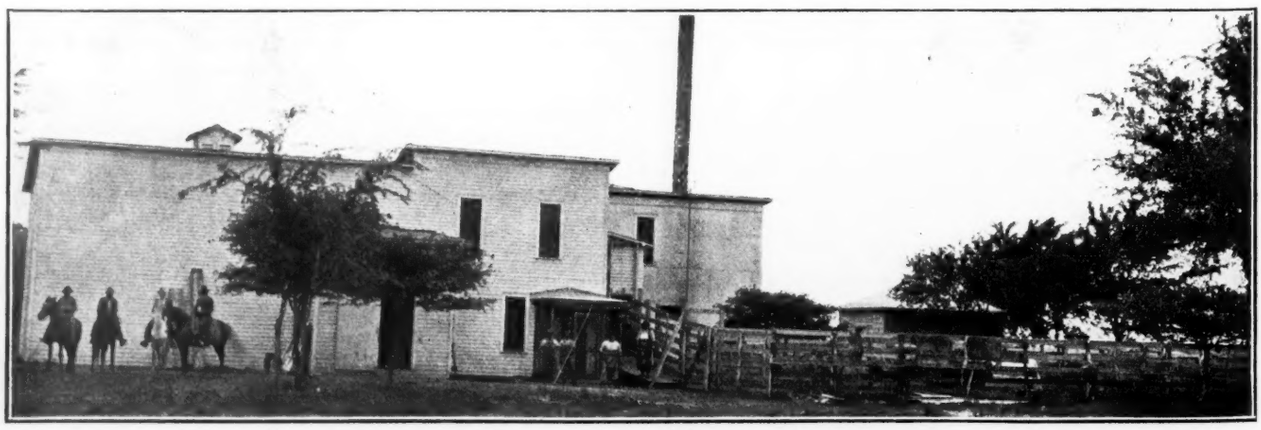
Paris, Tex., Has City Abattoir

Paris, Tex.—The municipal abattoir and reduction plant in Paris has been in successful operation for several months. With an estimated population of about 15,000, the municipal sanitary department found it very difficult to supervise the several separate slaughter houses that were maintained by the different butchers. The health of the people was constantly menaced by the unsanitary conditions under which the animals were slaughtered and the meat handled. On the urgent recommendation of Mayor Ed. H. McCuistion the city then determined to establish its own abattoir and an issue of $10,000 bonds was voted for the construction of the plant. Charges are made which are intended to cover the items of operation, insurance, interest and sinking fund for bonds, and allow 10 per cent for repairs. The total operating expenses are about $400 per month, outside of fuel. The inspector who inspects at the abattoir is also the inspector of markets, grocery stores, confectioneries, dairy herds and dairy products, and the fees for all these inspections are turned in to the abattoir fund, and minimize slaughter and cold storage charges.

The hides, with the carcasses, remain the property of the butcher, while the waste parts go to the reduction plant. The rules governing the inspection are the same as observed by the inspectors of the Federal Government. When an animal is slaughtered the offal is immediately taken in tubs by means of a pulley up to the second story, and then by overhead trolley into the reduction department, and is dumped into the reduction plant. The chill room, cold storage, and all floors, except in the boiler room, are of concrete, and the entire building is constructed with special reference to perfect sanitation. Water and hydrants are scattered all through the building. A considerable amount of tallow and tankage are obtained from the reduction plant. An arrangement is in operation for condensing the odors and trapping them into the sewers. Those which are not treated in this manner are destroyed under the firebox of the boiler. The charge for inspection, slaughtering and delivering on the hook in the butcher shop is $1.25 for each beef and 75 cents for each hog, calf, sheep and goat. These charges also include five days refrigeration. When a carcass is held in excess of five days it is charged for at the rate of 10 cents per day. The stock pens are well arranged. Each butcher has his own pens and is required to deliver his animals to them.

Record of Automobile and Horse Vehicle Accidents

Washington, D. C.—At a hearing before the Commissioners on the proposed regulation requiring lights on all vehicles the question was raised as to the comparative frequency of accidents due to automobiles and to horse-drawn vehicles. Commissioner Cuno H. Rudolph, Chairman of the Board, replied by presenting the following figures for nine months ending March 31: Automobiles—Accidents resulting in death, 6; in serious injury, 32; in slight injury, 139; in property loss alone, 157; in no injury or loss, 37; total, 371. Vehicles drawn by animals—Accidents resulting in death, 3; in serious injury, 61; in slight injury, 332; in property loss alone, 256; in no injury or loss, 83; total, 735.



MUNICIPAL ABATTOIR, REDUCTION PLANT AND STOCK YARDS OF PARIS, TEX.

LEGAL NEWS

A Summary and Notes of Recent Decisions—Rulings of Interest to Municipalities

Appraisal of Water Works—Going Value

City of Omaha, Petitioner, v. Omaha Water Company.—The appraisal of a water works plant where a municipality elects, under legislative authority, to exercise its option to purchase at a value to be determined by three engineers, one each to be selected by the city and the water works company, and the third by the two so selected, is a matter of public concern, and unanimity among the appraisers is therefore unnecessary, the decision of the majority being sufficient.

The valuation of a water works plant, made by a board of appraisers where a municipality has elected, under legislative authority, to exercise its option to purchase at a value to be determined by three engineers, one each to be selected by the city and the water works company, and the third by the two so selected, is not vitiated, in the absence of any evidence of actual bad faith, by the examination of the company's books by the appraisers without the consent of the city, or the presence of its representatives, since the strict rules relating to arbitration and awards do not apply.

The city of Omaha had the power to acquire and operate a private water works plant as it existed, with its outlying distributing systems serving adjacent suburban towns, under Nebraska Laws 1887, providing for the construction and maintenance of water works "either within or without the corporate limits of the city," suplemented by Laws Nebraska 1897, granting the city power to appropriate any existing water works system lying within the city or in part without such city, and within 10 miles from the corporate limits, and by Laws 1903, providing a method of procedure for acquiring municipal water plants, and the creation of a water board for their control and management, and Comp. St. 1907, empowering water boards to contract with any municipality adjacent to said city to supply such municipality with water.

The acquisition of a water works plant as it existed when the city made its election, under legislative authority, to exercise its option to purchase, including the outlying distributing systems serving adjacent suburban towns, must be deemed to have been within the contemplation of both the city and the water works company, where such system was a single one, having a common source of supply and common main connections therewith, unless the ordinance exercising the option is so plainly limited to the purchase of only so much of the distributing system as lay wholly within the corporate limits as to admit of no other meaning.

The commercial value of a water works plant as a going concern is properly included in the valuation of the plant by the board of appraisers appointed, where the municipality has elected to exercise its option to purchase, although the ordinance exercising such option provides that nothing shall be paid for the unexpired franchise of the water works company.—United States Supreme Court, 130 S. C. R., 1009.

Paving—Competitive Bids

Cleveland Trinidad Paving Co. v. Lord et al.—Where an ordinance authorizing paving required that it should consist of a certain variety of asphalt which was an article of common merchandise, and of no greater price than other kinds of asphalt, and was not held in monopoly, the provision was not void as violative of the charter provision requiring contracts to be let to the lowest and best bidder.—Kansas City Court of Appeals, 130 S. W. R., 371.

"Adjoining Municipality" Defined

Bayliss et al. v. Mayor and Council of Borough of North Arlington et al.—In P. L. 1897, as amended by P. L. 1899, the phrases, "any adjoining municipal corporation," and "any adjoining municipality" refer only to municipalities whose corporate territories are contiguous.—Supreme Court of New Jersey. 76 A. R., 1024.

Municipal Corporations—Employment of Counsel

Judson v. City of Niagara Falls.—Where the Common Council of the city of Niagara Falls appointed a committee to investigate a controversy between the Police Department and office of Police Justice, as authorized by charter, the committee on authority given by Common Council had the power to employ counsel to assist in the investigation other than the Corporation Counsel, notwithstanding section 483, providing that the Corporation Counsel shall act as the legal adviser of the Common Council, and of the several officers, boards, and departments of the city, and such officers, boards, or departments shall not employ other counsel, and section 65, providing that no member or committee of the Common Council or other officer of the city shall have power to employ any person or incur any expense except as provided in this act; the Corporation Counsel being the legal adviser of the Mayor, who was President of the Police Board and through him of the Police Department, and the Corporation Counsel being appointed by the Mayor and subject to removal by him on specific charges after a trial.—New York Supreme Court, 124 N. Y. S., 282.

Assessments—Liability of Trustee

City of Bangor v. Peirce.—Neither the State nor Federal Constitution prohibits the enactment of section of Revised Statutes imposing a personal liability upon the party assessed for benefits to his abutting real estate resulting from street improvements. A party vested with the legal title to such abutting property, though in trust only, is within the statute, and can be assessed and made personally liable for such benefits, since he has the right of reimbursement from the trust estate. If such trustee does not pay the assessment in his lifetime, an action can be maintained under Revised Statutes against his goods and estate in the hands of his executor or administrator.—Supreme Judicial Court of Maine, 76 A. R., 945.

Contracts—Right to Reject Bids

Molloy v. City of New Rochelle.—No contractual relation with a municipality arises from a mere bid unless by a statute, and the advertisement, a bid pursuant thereto, is as a matter of law an acceptance of an offer apart from any action by the municipality or its officers, and hence, where a statute and an advertisement called for proposals, a bid does not bind a contract. Under a statute requiring contracts to be awarded to the lowest bidder, the awarding body, acting in good faith, may refuse to so award a contract if they deem it for the best interest of the city to do so, and may reject all bids and readvertise.—Court of Appeals of New York, 92 N. E. R., 94.

Disannexation—Proof Required

Town of Windfall City et al. v. State ex rel. Wood.—A petition to compel municipal action on a petition to disannex lands from a town under Burns' Annual Statutes, 1908, is insufficient, unless it shows that the boundary of such lands forms part of the boundary of the town.—Supreme Court of Indiana, 92 N. E. R., 57.

Street Paving Contract—Extra Work

United States Wood Preserving Co. v. City of New York.—Putting in expansion joints in a wood block pavement is "extra work," within a contract requiring, as a condition to a claim therefor, or its allowance, that it shall be first authorized in writing, and the price to be paid therefor be agreed on in the same way.—New York Supreme Court, 124 N. Y. S., 248.

Slippery Sidewalk—Liability

Austin v. City of Dunkirk.—Defendant city caused to be constructed a sidewalk in one of its principal streets with a surface as smooth as glass. Plaintiff was passing over this walk in the morning. There had been a slight fall of snow during the night. Held, in an action for personal injuries from falling on the sidewalk, that the construction of such sidewalk was a judicial act on the part of defendant for which it was not liable, and the submission of its liability to the jury was error.—New York Supreme Court, 124 N. Y. S., 248.

Tax Bills—Validity—Restraining Enforcement

Ernst et al. v. City of Springfield et al.—Where, in a suit to prevent the enforcement of tax bills for the construction of a sewer, the evidence showed that charges made for excavating rock were in excess of the amount allowed by the contract, the burden was on the contractor to purge the tax bills of the illegal parts, and to give the court data by which it could separate that which was illegal from that which was legal, and where it was not practicable to make an accurate estimate of the actual amount of rock excavated, the contractor permitting the violations of the contract providing for the measurement of rock excavations could not recover for rock excavations, and the whole amount included in the tax bills for such excavation, was illegal.—Springfield Court of Appeals.

Claim for Damages—Notice

Kennedy v. Mayor, Etc., of City of Savannah.—The requirement that the notice shall state the negligence which caused the damage was sufficiently complied with in this case, and it was error to nonsuit the plaintiff upon the ground that the statement of the cause of the injury was not sufficiently specific. One who claims damages against a municipality is not required to do more than to state definitely and specifically all the facts upon which he bases his claim. The form of the notice is not amenable to the strict rules of pleading. It is intended only to state such facts as will enable the municipality to promptly investigate for itself the merits of the claim.—Court of Appeals of Georgia, S. E. R., 652.

Public Improvement—Liability of Officers

Wallenberg v. City of Minneapolis et al.—The public officers who perform the physical acts required to make a public improvement, which, though irregularly made, is performed pursuant to the direction of the municipality, and is one which it is within the authority of the municipality to order, are not trespassers or personal wrongdoers.—Supreme Court of Minnesota, 127 N. W. R., 422.

Action to Determine Title—Parties

Klatt v. City of Detroit et al.—In a suit against a city to determine title to land sold to it by its Treasurer for nonpayment of a special assessment, and claimed by complainant by adverse possession, the Treasurer, from whom complainant demanded a certificate pursuant to law that taxes and assessments had been paid, was properly made a party.—Supreme Court of Michigan, 127 N. W. R., 409.

Private Hospital—Police Power

Shepard et al. v. City of Seattle.—Where an ordinance required a written permit from the City Commissioners of Health in order to establish a private hospital, the requirement being for the purpose of showing that the other provisions of the ordinance were complied with, was unobjectionable in itself. The preservation of the public health and safety is one of the chief objects of local government, and every citizen holds his property subject to a reasonable exercise of the police power.—Supreme Court of Washington, 109 P. R., 1067.

Assessments—Appeal—Time

Real Estate Investment Co. v. City of Spokane.—Spokane City Charter, relating to special assessments for street improvements, is silent as to the manner of confirmation, but Laws 1901 provide that the Council shall confirm the same, if correct, by resolution or ordinance in conformity to the City Charter. Held, that where on the overruling of objections to an assessment, a resolution was passed confirming the same, an appeal taken within 10 days thereafter was not premature, though no appeal was taken from the ordinance thereafter passed confirming the assessment rol.—Supreme Court of Washington, 109 P. R., 1057.

Advertisement for Bids—Competition

Hastings Pavement Co. v. Cromwell, Borough President.—Where, because of the steep grade of a road, it was determined to pave a portion thereof with bitulithic pavement or asphalt blocks designedly omitting smooth pavements, an advertisement for bids on such pavements presented a fair and reasonable opportunity for competition.—New York Supreme Court, 124 N. Y. S., 389.

Vacation of Street, Right to Damages

Mayor and Common Council of City of Newark v. Hatt et al.—Where part of a street between the two next adjacent cross streets is vacated, all of the land between the cross streets bounding on the partly vacated street suffers a special injury, whether it abuts on the vacated portion or not, for which damages may be appraised and awarded, under a statute requiring a city to pay damages caused by the vacation of any street. The building of a railroad embankment across such vacated portion of a street is not an element to be considered in assessing the damage resulting from the vacation, in part, of such street.—Court of Errors and Appeals of New Jersey, 77 A. R., 47.

Ordinance—Effect of Partial Invalidity

City of Greenville v. Pridemore.—Civil Code, 1902, requires sentence in the Mayor's Court to be in the alternative. An ordinance provided for punishment for its violation as follows, "any persons violating any of the provisions of this ordinance shall be fined not less than $20 nor more than $50 or imprisoned 30 days, or both fined and imprisoned at the discretion of the Mayor." Held, that though so much of the ordinance as purported to confer power to impose both a fine and imprisonment was void, the ordinance was not rendered entirely invalid, since, without the provision, the ordinance remained complete, providing for punishment in the alternative.—Supreme Court of South Carolina, 68 S. E. R., 636.

Lien for Labor—Steam Roller

Troy Public Works Co. v. City of Yonkers et al.—Under Lien Law giving a lien for the value or agreed price of labor performed or materials furnished for the construction of a public improvement, a lien may not be acquired for the use or rental of a steam shovel for use on the work, when the person claiming the lien did not perform any labor in connection with such use, though the implement was hired by the contractor specially for use on the work.—Supreme Court of New York, 124 N. Y. S., 307.

Construction of Part of Contemplated Improvement

Kansas City v. St. Louis & S. F. R. Co. et al.—A city will not be permitted to assess benefits for a public improvement, where the improvement in immediate contemplation is but a part of a larger plan not yet adopted, and which, unless the entire plan is carried out, will result in damage, rather than benefit; and the mere fact that an ordinance has been passed covering the rest of the improvement will not support the assessment, where the ordinance has not been acted upon, and the evidence shows that the city is at present unable to carry it into execution.—Supreme Court of Missouri, 130 S. W. R., 273.

Ordinance—Time of Taking Effect

Town of Winnfield v. Grigsby.—The Town of Winnfield was without authority to enact an ordinance declaring a certain act unlawful and making the ordinance having effect from its passage without publication or notice and assigning no cause for so doing. A prosecution based upon such ordinance for an act alleged to have been committed two days after the passage of the order is set aside.—Supreme Court of Louisiana, 53 S. R., 53.

Defective Sewer—Failure to Remedy

Murphy v. Mayor and Council of Borough of Atlantic Highlands.—When a public sewer becomes clogged, and private property thereby becomes flooded, it is the duty of the municipality, when notified of the situation, to take the necessary steps to remove the clog with reasonable promptness; and for the breach of such a duty an action will lie.—Supreme Court of New Jersey, 76 A. R., 1073.

Sidewalk—Assessment of Benefit

Lehigh Valley R. Co. v. Mayor, etc., of City of Dover.—A city by virtue of power given in its charter to construct sidewalks at the expense of the abutting owner, passed an ordinance for the paving of a sidewalk along the Morris Canal which at that point was fenced off from the highway; the sidewalk on the opposite side of the street, where the houses were located, was not required to be paved; the sidewalk was of no benefit to the owners of the canal. Held, that they could not be subjected to a special assessment for benefits.—Supreme Court of New Jersey, 76 A. R., 450.

NEWS OF THE SOCIETIES

League of American Municipalities—The fourteenth annual convention was called to order in the Auditorium, St. Paul, August 23. Mayor Keller, in an address of welcome, extended the courtesies of the city to the delegates. His address was followed by a response from David E. Heineman, Detroit, president of the league. Secretary John MacVicar made his annual report.

A. H. Griffith, Director of the Detroit Museum of Art, made a plea for the part that art must play in municipal administration and in the education of the youth of the country, at the afternoon session. Martin Behrman, Mayor of New Orleans, discussed at length the street paving problem. He was followed by E. R. Schreiter, clerk of the common pleas council, Detroit, who told how his city cared for pavements.

Frank T. Fowler, superintendent of streets for Chicago, who was to have discussed the paving problem, resigned his office two weeks ago and failed to appear. In the afternoon the delegates were given an automobile ride around the city. In the evening the city was illuminated by 40,000 incandescent lights hung in festoons.

On Wednesday the 400 delegates met at the Ryan Hotel, where special cars were boarded for Minnehaha Falls, the Soldiers' Home and the Minneapolis City Hall. A stop was made at the Minneapolis workhouse, where lunch was served on the lawn. In the absence of Mayor J. C. Haynes, Arthur W. Selvers welcomed the delegates. A paper on the Government of Cities by Commission, by J. T. Powell, Fort Worth, Tex., was read by Mayor Jones, Independence, Mo. Mayor Grant Conrad, San Diego, Tex., also presented a paper on the same subject. In Fort Worth all the meetings of the commission are public, with representatives of the press in attendance, and full details of the meetings are published. There are no committee or secret meetings. The meetings are held in a room large enough to accommodate persons having business with the commission.

"The people of Fort Worth," Commissioner Powell said, "take an intense interest in city affairs, which are discussed everywhere. Civic leagues have been organized in all the wards, which meet each week for the purpose of discussing public questions; committees from these leagues are in weekly attendance upon the sessions of the commission; new and important legislation is often initiated at these ward meetings and presented to the commissioners, and frequently there are counter proposals from other leagues, which result in a general discussion and consideration by the entire body; in fact, every question or ordinance of a general nature is reviewed in the ward leagues before being disposed of by ordinance."

In the course of the discusison following these papers Mayor D. L. Love, Lincoln, Neb., said that though he was opposed to the commission form, he thought a better form of choosing city officials was needed. He thought men in administrative positions should be appointed not elected. He said the payment of high salaries does not necessarily result in getting the best men in office. The higher the salaries the more the scrambling for office. He favored the election of non-salaried officers who should have authority to appoint competent executive officers to conduct the administrative affairs of the departments. He further suggested that the office of Mayor should be made a professional one, so that a Mayor who proved his efficiency in one city might be offered a similar position in another. Mayor Knotts, Gary, Ind., asked some pointed questions as to whether it would be easy for a candidate for a commissionership to be subject to political schemes to secure office, as it would be for an aldermanic candidate. The discussion showed no signs of ceasing, when President Heineman called attention to the fact that dinner was waiting at Tonka.

The sessions on Thursday were held in St. Paul. In the morning papers were presented by Dr. P. M. Hall, Commissioner of Health, St. Paul, on the Collection and Disposal of City Waste. In the matter of handling garbage he said that all water should be drained out of the garbage in the kitchen and the comparatively dry remainder wrapped in a paper and then placed in the garbage can. In this way there was no difficulty in keeping the can clean, and the garbage, even if it should stand several days, would not be offensive. A City's Control of Outlying Districts was discussed by John H. Gundlach, president of St. Louis City Council. In the afternoon a session was held in Harriet Island, at the playgrounds and municipal baths. An elaborate program of athletic events and games was carried out. The question box was opened and much interest shown in the discussions submitted. Mayor Darrow, La Porte, Ind., had submitted the question: "Shall the State legislatures create the charters for cities, or should the cities themselves create them?" brought out many comments. Mayor Behrman, New Orleans, thought the municipality should make the charter. The Mayor of Roanoke, Va., took the opposite view, and said that legislatures should not only place restrictions upon cities in this respect and that the majority of State constitutions do not go far enough in restricting cities.

At the evening session in the concert chamber of the City Hall, John MacVicar, one of the commissioners of Des Moines, gave a talk on the commission form of government as it had worked out in Des Moines. In summing up at the conclusion of the discussion which followed his talk, the benefits which he felt Des Moines had secured by the adoption of the commission form of government, Mr. MacVicar placed first of all the elimination of partisan election in municipal affairs; second, the election of the members of the commission at large, instead of the election of representatives or aldermen from the different wards; third, the reduction of the number of officials and the centralization of authority; and fourth, the payment of adequate salaries for services rendered.

Too much emphasis, said Mr. MacVicar, cannot be placed upon this plan of proper compensation for services rendered. It has become a common thing among our large cities to speak of a business administration. And then we immediately do the most unbusinesslike thing when we turn around and ask men to give their time to the city business without proper recompense.

One change which Mr. MacVicar said he would favor in the plan now in vogue in Des Moines would be the election of the five commissioners, instead of the election as at present of four commissioners and a Mayor. Under the present system the Mayor has no more authority than any of the other commisisoners, although receiving $3,500 a year instead of $3,000, as do the others. He can veto none of their acts. Mr. MacVicar thought that it would simplify the ballot and place the responsibility more directly where it belonged, on all the commissioners, were it left to them to select their own chairman, who could hold the title of mayor.

To a dozen questions put to him in different form, but each intended to bring out what check, if any, was imposed upon the members of the commission to guard again a possible combination of corrupt officials to loot the finances of the city, to exceed charter provisions in the matter of expenses, to build up a machine through the appointment of political henchmen, or other corrupt practices, Mr. Mac Vicar invariably replied that there was no such check. The creation of any such checks upon the commissioners, he declared, would in itself defeat the essential purpose of the commission form of government, which to be successful must be in the hands of upright men, to whom must be given the freest rein and the widest latitude in the administration of affairs. If the men selected for office are not honest, he emphasized, no check can possibly make them honest.

At the Friday session, J. Barry Mahool, Baltimore, presented a paper on Home Rule for Cities. A paper by James C. Haynes, Minneapolis, on the Relation of the Municipality to Its Public Service Corporations was read. He expressed the hope that Minneapolis would own and operate all its light, power and heating plants and furnish the product practically at cost. He declared that within the next ten years every city should insist that all coal consumed be converted into gas at a central station and delivered to all consumers of fuel through pipes. He recommended the Minneapolis contractual gas ordinance as a good model to cities which find it necessary to renew franchises. Mayor S. A. Carlson, Jamestown, N. Y., presented a paper on Simplified City Government. In the afternoon the delegates were taken to a grandstand where they reviewed a parade of the men and equipment of the municipal departments of St. Paul. The first division was devoted to a display of the police department. The second division of the parade was filled by the floats and appliances of the parks, water and health departments. The street cleaning department had a display of 80 sprinkling carts. The fire department comprised the last division.

The election resulted in the choice of the following officers: D. A. Brown, Mayor of Kansas City, president; R. F. Maddox, Mayor of Atlanta, Ga., first vice-president; T. E. Knotts, Mayor of Gary, Ind., second vice-president; J. J. Ward, City Controller, Toronto, third vice-president; J. T. Connolton, Council, Newark, N. J., fourth vice-president; John MacVicar, Des Moines, re-elected secretary-treasurer. Trustees: Andrew Olson, Mayor of Moline, Ill.; J. J. Keeley, City Council, Jackson, Mich.; Arthur W. Selover, Alderman, Minneapolis; B. McClurg, Newburg, N. Y.; C. J. Brown, City Clerk, Winnipeg; Frank Jordan, Council, Duluth; S. A. Carlson, Mayor of Jamestown, N. Y.

The next annual convention will be held at Atlanta, Ga.

Exhibits of devices and materials pertaining to the work of the departments of municipal administration were displayed in the section of the Auditorium devoted to the sessions of the municipalities convention. Agents of manufacturers and demonstrators were on hand ready to show their wares to the delegates in the few idle moments of the convention. Road making and street cleaning machinery were conspicuous among the exhibits in convention hall. Two big Chicago and Racine firms showed their line of machinery. Asphalt road building material and photographs of its application made up one interesting exhibit in the convention hall. The Kettle River Quarry Co. showed creosoted paving blocks and Kettle river sandstone blocks to the visitors. There was an exceptional interest in the creosoted blocks. Mayor Brown of Kansas City says that it is regarded most favorably in that city as a paving material, and there is in prospect extensive use of creosoted block pavement there. Accounting machinery was another feature of the municipal exhibits in convention hall. The machines are operated by electric motors and make calculation much easier.

Virginia State Firemen's Association—The twenty-fourth annual convention was held at Alexandria, Va., August 24-25. President J. N. R. Curtin, Alexandria, opened the convention with about 200 delegates in attendance. Mayor F. J. Paff delivered an address of welcome in behalf of the city government. Representative Chas. C. Carlin welcomed the delegates in behalf of the citizens. John H. Trmyer spoke for the local firemen. The feature of the convention was a parade. The Phoebus company, Fort Monroe, got the first prize for largest and best uniformed company. The fireboat Firefighter of Washington gave an exhibition in the harbor. Newport News was selected as the next meeting place. Officers were elected as follows: President, J. P. Fraley, Newport News; senior vice-president, L. E. Loobabill, Roanoke; statistician, G. E. Glenn, Harrisonburg; secretary, Geo. C. Cummings, of Portsmouth; treasurer, T. J. Williams, Charlottesville, and chairman of the legislative committee, John H. Redwood, Richmond.

Utah State Firemen's Association—The annual convention was held at Bingham August 25. Provo was selected as the next meeting place. The election of officers resulted as follows: President, W. W. Williams, of Sandy; first vice-president, J. B. Loveless, of Provo; second vice-president, H. S. Townsend, of Park City; secretary, Charles J. Stillwater, of Bingham; treasurer, Luke Simpson, of Salt Lake; truestees, A. B. Canfield, Ogden; W. D. Wilson, Park City; Captain W. T. Ayland, Salt Lake.

Iowa Association of Chiefs of Police—The annual convention was held at Des Moines, August 26. President A. G. Miller recommended that the State legislature pass a law placing all police officials under the civil service. At present neither police chiefs, captains nor sergeants are required to conform to civil service standards. Chief Miller also asks that the legislature be asked to establish a State bureau of identification, with a rogues' gallery containing photographs, finger prints and other means of identifying all the criminals of the State, and also a State detective bureau to be located at the capitol. A committee was appointed to call on the legislators and urge the passage of measures covering these points. Watertown was selected as the next meeting place. Officers were elected as follows: Chief, J. M. Carl, Cedar Rapids, president; Chief C. F. Froom, first vice-president; Chief George Yeager, Des Moines, second vice-president; Chief W. T. Dineen, Waterloo, secretary-treasurer.

New York State Association of Chiefs of Police—Thirty-four chiefs of police from various cities of the State were in attendance at the opening of the eleventh annual convention of the association. It was the first two-day session ever held by the association and was generally pronounced as the most successful. The sessions, held in the council chamber, were opened by President William Bell, of Auburn. Mayor Charles C. Duryee delivered an address of welcome, in which his honor made several suggestions relative to police work. His address in part was as follows:

Since the organization of the first municipal police department we have been taught that its principal purposes were the detection and prevention of crime in order that society might be protected. The average citizen, however, has placed more stress on the word "detection" in connection with the policeman's duties than on the word "prevention" until I fear that more time and energy are expended in this connection than in the prevention of crime. As a result of this conclusion I would venture to offer one suggestion somewhat tentatively and rather in the nature of an inquiry, as I would hesitate to advise men whose wisdom and experience in such matters are so good, whether an undue expense is devoted to the detection of crime as compared with the discovery and correction of conditions likely to cause crime; in other words, the prevention of crime.

There has been much discussion as to whether adequate results are received for the vast amounts of money expended for the police department. Every police commissioner or head of a police department explains his failure to prevent crime more completely by the lack of a sufficient number of patrolmen. The requests for men seem to be equally urgent no matter how many may be granted and the failure to completely prevent crime seems to show no appreciable effect. This condition naturally produces the inquiry as to the value of a patrolman under the present system compared with his cost. The patrolman is said never to be at any particular place when wanted and the man who sees any disorder in his house or on the street never knows just where to turn for the patrolman, who seems always to be on some other part of the beat; the average citizen has no knowledge of how far the beat extends or in what direction and does not know where to turn to summon a policeman quickly.

After considering these circumstances, I confess to a feeling that if a much larger number of policemen was kept in reserve at station houses well placed throughout the city so that not one, but a squad, could be had immediately at any given point upon the sending in of an alarm by telephone or signal system, the police force would be more formidable to evil-doers than it is now.

Is not the lack of any definite aim and purpose on the part of the patrolmen one of the reasons, if not the chief reason, for severe criticism to which many of our police departments have been subjected.

In considering seriously this tentative inquiry, I would suggest that when every chief of police returns to his home he compare the number of arrests made by patrolmen while actually patrolling their beats, and the number made by these patrolmen who have been assigned to special duty or have been sent out by order of the head of the department. Such a comparison, I believe, will assist your association in coming to a better understanding of the true worth of a patrolman.

At 1:15 the party left on a private car provided by the Schenectady Railway Company for Saratoga, where the afternoon was spent. At the Wednesday session Chief Charles H. Goodrich, Binghamton, read a paper giving some general impressions on police business. Other papers were presented by Chief J. F. Quigley, Rochester; Michael Regan, Buffalo; Major Richard Sylvester, Washington, and State Excise Commissioner Clement. Mr. Clement said there were multiplying evidences on all sides of the growth of a public sentiment demanding a far better enforcement and observance of the excise law. A practical phase of the question was in respect to the rights of the better class of dealers. The law-abiding saloonkeeper is penalized by the loss of business gained by those who violate the law. The commissioner thought that the law was unfair in that it did not provide penalties for the person who induces the saloonkeeper to commit a crime as well as for the dealer himself. Another anomaly of the law is the apparent unfairness and inconsistency in the Sunday selling prohibition and exceptions in the matter of clubs, hotels, etc.

Officers were elected as follows: Chief James W. Rynex, Schenectady, president; Chief James M. Quigley, Rochester, vice-president; Chief James L. Hyatt, Albany, secretary and treasurer; Charles Evans, South Bethlehem, Pa., and James Donovan, Portchester, N. Y., were named to fill vacancies in the board of governors.

Atlantic Deep Waterways Association—At the convention, opened at Providence, R. I., August 31, considerable interest in the municipal side of the problem was shown. Mayor John F. Fitzgerald, of Boston, Mass., presented a paper on Boston's interest in the proposed waterways. Mayor Edward L. Smith and Dock Commissioner Edward H. Warner, of Hartford, Conn., both made addresses with special reference to Hartford dock plans. Herbert Knox Smith, U. S. Commissioner of Corporations, in an address, said that only two of the fifty largest ports in the country, San Francisco and New Orleans, have complete control over their water front; eight have small control, and forty none at all. Commissioner of Docks Calvin Tomkins, of New York City, in a paper on Terminal Facilities Required for the Successful Coordination of Rail and Water Traffic, said:

Organization which begins at the water-front should progressively proceed inland, accompanied by provision for passenger transit, parks, light and air for dwellings and factories and the numerous accessories which go to make up a civilized community as distinguished from a mere aggregation of population. Generally speaking, the three steps in water-front improvement include, first, the public acquisition of occasional piers, not too far distant from each other, for public use; second, the development of joint terminals for railway and steamship use, with warehousing and factory adjuncts at strategic points; finally, the progressive municipalization of the entire water-front, to be considered ultimately as the place where the community receives and ships its food, fuel, raw materials and finished products. Water-front terminals under too exclusive private control may seriously retard the growth of a city by increasing the cost of its supplies and its exports.

Calendar of Meetings

September 5-9.
American Public Health Association.—Annual Meeting, Milwaukee, Wis.—W. C. Woodward, Secretary, Washington, D. C.

September 6-8.
Association of Edison Illuminating Companies.—Annual Meeting, Thousand Islands, N. Y.—Walter Neumuller, Assistant Secretary, 55 Duane St., New York, N. Y.

September 6-9.
Pacific Coast Association of Fire Chiefs.—Eighteenth Annual Convention, Stockton, Cal.—A. A. Sumner, Secretary, Anacortes, Wash.

September 6-9.
International Association of Municipal Electricians.—Fifteenth Annual Convention, Convention Hall, Rochester, N. Y.—Frank P. Foster, Secretary, Corning, N. Y.

September 8-12.
Michigan Gas Association.—Annual Meeting on Steamer sailing from Detroit, Mich.—Glenn R. Chamberlain, Secretary, Grand Rapids Gas Light Co., Grand Rapids, Mich.

September 14-15.
Connecticut State Firemen's Association.—Twenty-seventh Annual Convention, Waterbury, Conn.

September 14-16.
League of Michigan Municipalities.—Annual Convention, Lansing, Mich.

September 20-22.
Central States Water Works Association.—Convention, Indianapolis, Ind.

September 20-23.
Kansas State Volunteer Firemen's Association, Eureka, Kan.

September 21-23.
Massachusetts State Firemen's Association.—Thirty-first Annual Convention, Lowell, Mass.—Burton Steere, President, Springfield, Mass.

September 21-23.
Colorado Electric Light, Power and Railway Association.—Annual Convention, Colorado Springs, Col.—J. C. Lawler, Secretary, P. O. Box 938, Colorado Springs, Col.

September 21-23.
New England Water Works Association.—Annual Meeting, Rochester, N. Y.—Willard Kent, Secretary, Narragansett Pier, R. I.

September 21-23.
Massachusetts State Firemen's Association—Thirty-first Annual Convention, Lowell, Mass.

September 26-30.
National Irrigation Congress.—Annual Meeting, Pueblo, Col.—Arthur Hooker, Secretary, Pueblo, Col.

September 27-29.
American Society of Engineering Contractors.—Annual Convention, St. Louis, Mo.—D. F. Hauer, Secretary, 12 Park Row, New York, N. Y.

September 28.
New Hampshire State Firemen's Association.—Convention, Meredith, N. H.

October 6-8.
American Automobile Association in cooperation with the National Grange, Farmer's Union, American Road Builders' Association, U. S. Office of Public Roads, and National Association of Automobile Manufacturers.—Third National Good Roads Convention, St. Louis, Mo.

October 10-11.
Massachusetts Police Association.—Annual Convention, Holyoke, Mass.

October 10-14.
American Street and Interurban Railway Association.—Annual Convention, Niagara Falls, Ontario.—H. C. Donecker, Secretary, 29 West 39th St., New York, N. Y.

October 11-16.
American Society of Municipal Improvements.—Seventeenth Annual Convention, Erie, Pa.—A. Prescott Folwell, Secretary, 239 W. 39th St., New York, N. Y.

October 20-21.
Ohio State Boards of Health—Twelfth Annual Conference, Cincinnati, O.—Dr. C. O. Probst, Secretary, Columbus, O.

November 14-18.
National Municipal League.—Annual Meeting, Buffalo, N. Y. Clinton Rogers Woodruff, Secretary, North American Building, Philadelphia, Pa.

November 21-23.
City Commission Congress.—Meeting, Galveston, Tex.—R. E. L. Giles, Secretary, Galveston, Tex.

May 29.
American Water Works Association.—Annual Convention, Rochester, N. Y.—J. M. Diven, 14 George St., Charleston, S. C.

TRADE NOTES

Cast-Iron Pipe, Chicago.—There is a fair run of current orders for small lots. Quotations: 4-inch, $27; 6 to 12-inch, $26; 16-inch and up, $25. Birmingham: A fair volume of business is being transacted at satisfactory prices. Quotations: 4 to 6-inch, $22.50; 8 to 12-inch, $21.50; over 12-inch, average $20.50. San Francisco: Small orders are becoming more numerous. New York: General demand shows slight improvement. Quotations: 6-inch, carload lots, $23.50 to $24.

Lead.—There is a fairly good demand in New York. Quotations: New York, 4.40c.; St. Louis, 4.30c.

Crusher.—The Eureka Stone & Ore Crusher Company of Cedar Rapids, Iowa, has just published a new catalog descriptive of their stone-crushing machinery and equipment. This crusher is made in fifteen different sizes with capacities ranging from one to thirty tons an hour. It also describes the Mitchell Eureka crusher, a machine of all-steel construction, designed to reduce 3-inch and 4-inch rock or ore to sand in one operation. The company equips plants complete with the necessary elevators, screens, bins and dump cars. They have just recently located in a large new factory building and their facilities for manufacturing are excellent.

Pneumatic Tires.—The necessity of inflating pneumatic tires to the correct air pressure is now pretty generally recognized as a means of getting due mileage from the tires. In order to place this information where it can be constantly referred to by the motoring public the Firestone Tire & Rubber Co. has prepared a wall hanger for garage display, containing a complete list of tire sizes and the corresponding air pressures. This hanger also illustrates and describes various types of tires that are now in use and the rims they will fit. Of special interest to motorists whose tires are not large enough for the load is a list of eleven oversize Firestone tires. These tires are interchangeable with present tires on present rims, but are built considerably heavier and contain from 30 per cent to 50 per cent greater cushion of air, adding greatly to the easy riding of the car and reducing the ultimate tire cost.

Cement.—The Lehigh Portland Cement Company has commenced work on its new plant at Mason City, Iowa. It will have a capacity of 5,000 bbls. per day, and it is understood the cost of the works will be in the neighborhood of $2,000,000. The company owns 700 acres in the vicinity of Mason City.

Wagons.—The Watson Wagon Company has let the contract for its new wagon manufacturing plant at Canastota, N. Y., which will consist of several one and two-story buildings and cost $125,000. Work will be started at once.

Automatic Cushioned Water Pressure Reducing Valve.—The Golden-Anderson Valve Specialty Company, Fulton Building, Pittsburg, Pa., has added an automatic cushion water pressure reducing valve to its line. In this valve the pressure to which it is desired to reduce the water is regulated by a spring, which is compressed to the desired tension by a plate on top of the valve. This spring acts on a piston attached to the main valve spindle and forces the valve open. The water on the high pressure side of the valve passes underneath this piston and through a port in the main valve spindle. When the pressure on the low pressure side reaches the spring setting the valve closes.

Creosoted Blocks—The Compressed Wood Preserving Company, Spring Grove avenue and Winton place, Cincinnati, O., manufacturer of wood paving blocks, is making additions to its plant which will more than double its present capacity.

PERSONALS

BARTON, C., Milford, Utah, has been appointed Mayor to fill the unexpired term of William Armstrong, deceased; he is cashier of the Milford Bank.

BOUILLON, A. V., formerly Superintendent of Public Utilities of Seattle, Wash., is now one of the four members of the Board of City Commissioners of Edmonton, Alberta, Canada, with a salary of $10,000 per annum; the other members are the Mayor, Robert Lee and A. Buchart.

BOYD, J. D., Fire Chief of Wallace, Idaho, was burned to death in the partial destruction of the city by forest fires; he was the son of Dr. and Mrs. John C. Boyd, of Monroe, Orange County, N. Y.

ELLIS, GEORGE W., Chief of Police of Houston, Tex., has tendered his resignation to Mayor Rice; he is over 60 years of age and relinquishes the position in order that a younger man may take up the reins.

HANSEN, PAUL, Assoc. M. Am. Soc. C. E., for several years connected with the Ohio State Board of Health as Assistant Engineer and for the past year serving as Acting Chief Engineer, has been appointed State Sanitary Engineer of Kentucky, to take effect on Sept. 1. The appointment was made by the State Board of Health of Kentucky, which has also appointed Mr. Hansen a member of the Ohio River Sanitary commission.

HOUNSHELL, R. N., Ada., Okla., has been elected Chief of Police to succeed George V. West, resigned; he was formerly a member of the police force of Rogersville, Tenn., his old home.

JORDAN, WILLIAM S., Mayor, and L. T. Gregory, City Comptroller of Jacksonville, Fla., have been making an inspection of the city departments of New York City.

LOVE, R. L., Chief of Police of Piedmont, W. Va., has been dismissed by Mayor M. J. Tierney to cut down expenses, as he claims, while Chief Love charges it was caused by his threat to raid a gambling joint which is under the protection of the Mayor.

PRATHER, FRED, Sylacauga, Ala., has been chosen as Mayor over J. W. Batson; also the following Aldermen: Charles Looney, John P. Vardaman, W. D. Hendricks, M. J. Hightower and H. H. Howard.

STEVENSON, HORACE L., Mayor of Jacksonville, Ala., about a score of times, has consented to be the candidate of all factions to head the city government again, and he will be chosen without opposition.

VAETH, RICHARD, Tacoma, Wash., a jeweler, has been elected as the fifth member of the Board of Park Commissioners, vice Marshall K. Snell resigned.

WHITE, PAUL H., Indianapolis, Ind., has been appointed by the Town Trustees of Cambridge City, Ind., as supervising engineer of the city electric lighting plant, and will at once prepare plans and specifications for increasing the capacity of the plant.

MUNICIPAL APPLIANCES

Tarvia Spread with Broom

THE process of road tarring as carried out in this country has been simplified by the production of a tar material which may be applied to the road without heating. This necessarily leaves a thinner film on the surface, but the cold tarvia sinks into the road further than the hot, and in that way compensates for the thinner surface coat. Where a road is suitable for this treatment, the work may be done very cheaply and expeditiously with watering carts and brooms dragged by

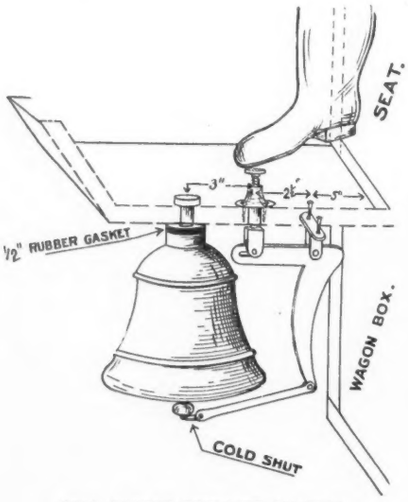
SPREADING TAR WITH BROOM

horses. In such places as Newton and Watertown, Mass., the costs are brought below three cents per square yard. Each year shows a marked saving in the quantity of material required, since enough is left on the road from the previous treatment to allow easy spreading and a use of a minimum amount of material.

Bell Ringer for Fire Apparatus

THE O'Brien Bell Ringer, made by the Walsh Safety Lock Snap Co., Detroit, Mich., is claimed to be the only successful device on the market for ringing fire bells on apparatus by foot power. The bell—any size or design—is hung under the footboard of the apparatus. The O'Brien bell ringer enables the man on the seat to keep the bell ringing continuously without interfering with his driving, putting on his coat or other action. In cities it is generally necessary to use bells, instead of gongs, to make fire apparatus distinguishable from street car gongs, ambulance alarms, etc. Ringing the bell by swinging the bell itself or moving the clapper by pulling a rope are unsatisfactory methods. With the O'Brien bell ringer the man on the seat can give the bell sharp, clean blows as fast as he can keep his foot moving. The bell is stationary and the clapper rights itself instantly after each stroke. This device is made of steel and polished brass. It is attached in a few minutes to any apparatus, using any size of bell.

The proper method of fastening this bell ringer is shown in the cut. The first holes for the two bolts must be exactly 5 inches from the seat board; then measure 2½ inches further and make the hole for the foot piece; 3 inches beyond this (from center to center of each hole) make the hole for hanging the bell. The bell must be hung from the footboard as shown in the cut. After holes are properly made unscrew the foot piece over the spring. This comes off easily and the ringer can then be fastened with the screw bolts, as shown in the cut. Use an open link, or cold shut, to fasten the end of the ringer to the clapper. To secure best results the clapper must not quite touch the side of the bell when the foot spring is held down; the bell will then ring with a clearer sound, when the foot spring is pushed down quickly. It can easily be seen that the force of the blow will carry the clapper to the bell, although it does not quite touch when the spring is pushed down slowly. The open link or cold shut can be adjusted in size to meet this condition. In hanging the bell a leather or rubber gasket must be used as shown in the cut. If this is not done, the bell will break in time and the sound will not be so distinct and clear. If the bell is short 6 inches or less, it can be hung further down from the footboard or a heavier gasket can be used. In many cases it is not necessary to hang the bell lower, the proper adjustment of the open link being sufficient to take care of any difference in sizes of bells.



BELL RINGER OPERATED BY FOOT

Empty Cement Sacks

THE number of sacks returned to cement manufacturers for credit is becoming greater every year, and as this item of the cement business grows in volume the importance of handling these sacks in the best way becomes increasingly greater. Careless and improper methods of shipping sacks are

EMPTY CEMENT SACKS IMPROPERLY BUNDLED

the cause of endless trouble to the shipper, the railroad and the manufacturer. Cement sacks should always be tied up and shipped in rolled bundles; then there is no trouble. The flat bundle often used, while it complies with the railroad specifications and looks good at first, gets out of shape after being handled a few times, as shown in the illustration. The flexibility of the bundle allows the ropes to loosen.

Stall Trip for Fire Horses

THE following claims are made for the Twentieth Century Stall Trip, made by P. F. Morrissey, 48½ Jefferson street, Auburn, N. Y.:

First—It is absolutely impossible for horse to get loose when trip is locked.

Second—It is impossible for horse to get caught and cause delay when trip is open, as jaw opens up even with stall plank, as can be seen in cut.

Third—It can be locked by pressing the thumb against the open jaw.

Fourth—It will last a lifetime, and is constructed so that no part can break or wear out.

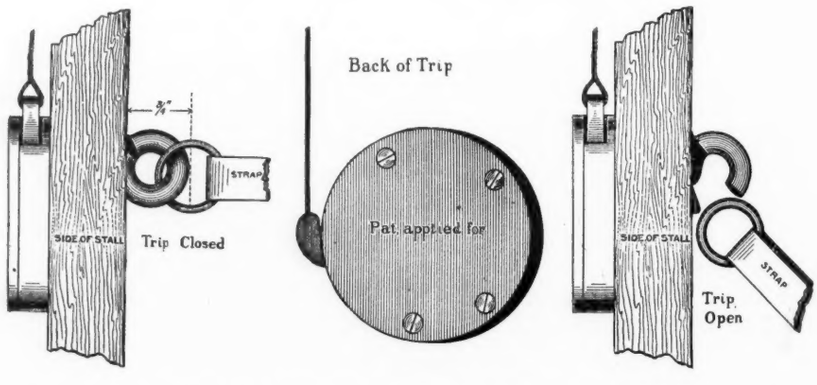
Fifth—It was invented by one who has had wide experience with all kinds of trips used in Fire Departments and quick hitches.

Sixth—It is endorsed by all prominent chiefs in states where they are in use.

Seventh—It can be worked by overhead wire or under the floor, as may prove most convenient.

Eighth—It is made of good material and is of the best workmanship.

Ninth—It is the most simple, durable and reliable trip ever put in use, and has never failed to give the best satisfaction.

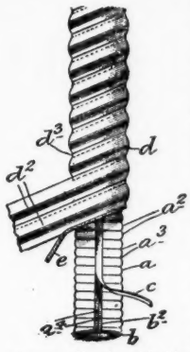


DETAILS OF TWENTIETH CENTURY RELEASE OR STALL TRIP

PATENT CLAIMS

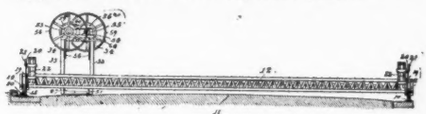
966,917. INSULATING - CONDUIT FOR ELECTRIC WIRES OR CONDUCTORS. Anthony P. Hinsky, Brooklyn, N. Y. Serial No. 541,222.

A flexible tubular conduit for electric wires or conductors composed of an inner fibrous tube formed by folding a strip of fibrous material so that the side edges thereof abut, said strip of fibrous material being corrugated at an angle to its opposite side edges, the said side edges where they abut being overlapped by a narrow strip of fibrous material which closes and seals the space between said edges, the said tube of fibrous material being inclosed by a helically wound metal strip curved in cross section so that one edge of said strip overlaps the other and a fibrous strip placed between the said overlapping edges, all of said fibrous parts being treated so as to render them impervious to moisture or liquids and so as to render said conduct watertight.



967,714. PAVEMENT-BLOCKING DEVICE. Rudolph S. Blome and William J. Sinek, Chicago, Ill., assignors to Rudolph S. Blome Company, Chicago, Ill., a Partnership. Serial No. 496,012.

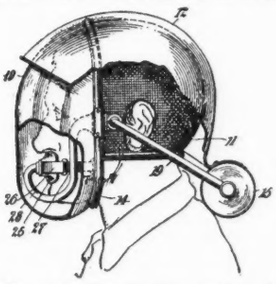
In a pavement marker, the combination of a frame, a carriage mounted on the frame, means to hold the carriage at predetermined successive adjusted positions on



the frame, a die upon the carriage, and means upon the carriage and connected to the die for raising and lowering the latter in substantial parallelism with the pavement, substantially as described.

968,232. RESPIRATORY HELMET. Harry Bentz, Larchmont, N. Y., assignor to Bentz System Company, New York, N. Y., a Corporation of New York. Serial No. 458,431.

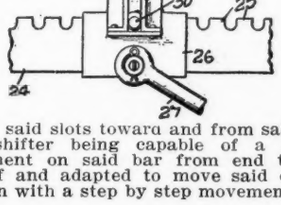
A respiratory helmet comprising a mask for the face, a tight-fitting hood connected with the mask and adapted to the head, a pivotally mounted shield for protecting the top of the head and adapted to swing over



the mask when not in use, means for supplying air to the mask and means for directing the exhaled air from the mask, substantially as set forth.

968,439. ROAD GRADING MACHINE. Carl O. Wold, Minneapolis, Minn. Serial No. 500,830.

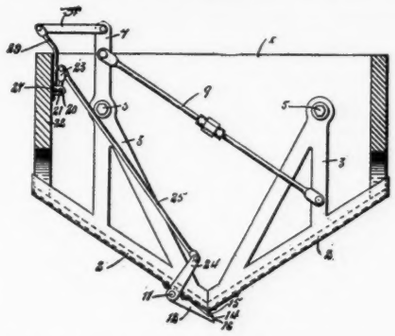
The combination, with a frame having carrying wheels, of a secondary frame pivotally connected with said first named frame, means for raising and lowering said secondary frame, a transversely arranged toothed bar, a carrier slidably mounted thereon and having slots therein forming guide ways, a shifter having studs movable



within said slots toward and from said bar, said shifter being capable of a rolling movement on said bar from end to end thereof and adapted to move said carrier thereon with a step by step movement.

968,511. DUMPING WAGON. Wilbur L. Collins, Baldwinsville, N. Y., assignor to Edward L. Montague, John W. Montague, and J. Kent Wright, Baldwinsville, N. Y., and Lewis N. Ostrander and Addison D. Merry, Phœnix, N. Y. Serial No. 412,895. Renewed May 28, 1910. Serial No. 563,975.

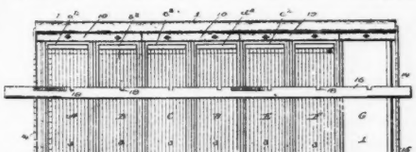
In a dump wagon, a box having dumping doors movable outwardly in opposite directions, locking means for holding the doors in their closed position, two forwardly extending rock shafts arranged in front of



the box, one being connected at its rear end to both of the doors for moving the same and the other being connected at its rear end to the locking means, and operating levers connected, respectively, to the front ends of said shafts, substantially as and for the purpose described.

967,912. HOLDER, ADDING-BOARD, AND INDICATOR FOR TAX-RATE SHEETS. Henry F. Heckert, Nashville, Ill. Serial No. 551,331.

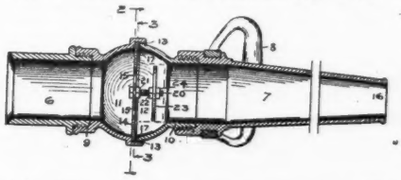
In a device of the kind described the combination of a board, provided with a plurality of transverse grooves, a plurality of tax sheets adapted to be secured to the board, a plurality of metallic T-shaped



strips as means for holding the sheets in proper position, the side members of the metallic strips overlapping the edges of adjacent tax sheets, the ridges of the strips received by corresponding grooves in said board, an indicator provided with a plurality of notches which are adapted to be adjusted from the front to the rear of the board, said indicator capable of sidewise movement upon the board, means to secure the strips in position comprising moldings.

968,462. PLAY-PIPE PRESSURE-EQUALIZER. Peter F. Glazier, Indianapolis, Ind. Serial No. 535,632.

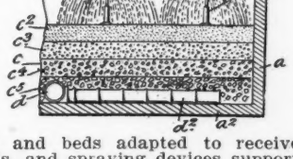
In a hose-line the combination with a



play-pipe, of a transverse pressure-plate located within the play-pipe approximately at the beginning of convergence of the walls of said play-pipe.

968,015. APPARATUS FOR FILTERING SEWAGE. Boyd Wilkie, Mount Vernon, N. Y. Serial No. 524,314.

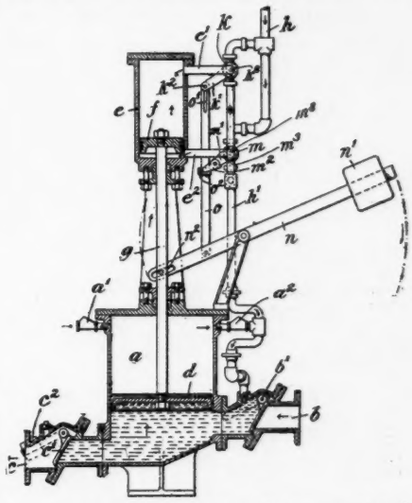
An apparatus of the class described, said apparatus involving liquid distributing



pipes and beds adapted to receive said liquids, and spraying devices supported on said beds and into which the liquids are discharged from said pipes.

968,263. AUTOMATIC DISCHARGER FOR SEWAGE, ETC. John F. Quinn, Washington, D. C. Serial No. 297,932.

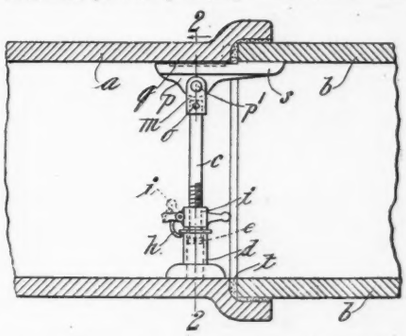
A discharger for sewage, etc., comprising a receptacle having a valved inlet and a valved outlet, a discharge piston movable in said receptacle, a power cylinder, a piston in said cylinder connected to the piston in the receptacle, a controlling valve at the upper end of said cylinder, means operated



by the movements of the discharge piston to actuate said valve, a second controlling valve at the lower end of said cylinder, and means operated by the movements of the discharge piston to open said valve to admit the motive fluid to the lower end of the cylinder to cushion the piston.

968,096. PIPE-JACK. Peter Thibodeau, Willimansett, Mass., assignor of one-third to Frank A. Rivers, Holyoke, Mass., and one-third to David H. Young, Willimansett, Mass. Serial No. 507,730.

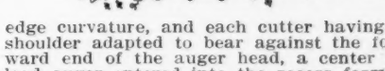
A pipe-jack for the purpose described, comprising a rod threaded at one end, a base-piece, a nut engaging the threaded portion of the rod and the upper edge of the base-piece, a cap member having an extended portion pivotally connected to the



other end of the rod, an annular ring integral with the base member, and a hook connected to the nut for engaging the said ring, as described.

968,471. EARTH AUGER. Martin Hardsocg, Ottumwa, Iowa. Serial No. 433,670.

In an earth auger, the combination of an auger head having around its exterior from end to end a spiral flange and provided with a recess, a pair of reversible cutters, each cutter having a stem entered into the recess formed in the head, each cutter having a cutting end formed with a lateral and



edge curvature, and each cutter having a shoulder adapted to bear against the forward end of the auger head, a center or lead auger entered into the recess formed in the auger head between the stems of the cutter and locking and holding the pair of cutters in place, a shoulder on each of the cutters, shoulders on the lead auger adapted to be contacted by the shoulders on the cutters, the cutters being so positioned with respect to the lead auger that when they are in one position the lateral curvature of the cutting end will be away from the lead auger, and when reversed the lateral curvature of the cutting end will be toward the lead auger, thus adapting the bits to produce cuts of different diameters when reversed with respect to the lead auger, substantially as described.

THE WEEK'S CONTRACT NEWS

Relating to Municipal and Public Work—Street Improvements—Paving, Road Making, Cleaning and Sprinkling—Sewerage, Water Supply and Public Lighting—Fire Equipment and Supplies—Bridges and Concrete Work—Sanitation, Garbage and Waste Disposal—Police, Parks and Miscellaneous—Proposals and Awards

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also corrections of any errors discovered.

BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
			STREET IMPROVEMENTS	
New Hampshire	Concord	Sept. 9	Surface graveling road in town of Gorham; cost $7,900	H. C. Hill, State Engineer.
Missouri	Kansas City	Sept. 9	Resurfacing 2 miles rock road on Little Blue road	R. T. Proctor, County Engineer.
Minnesota	Fairmont	Sept. 9, 11 a.m.	Bldg. State Road No. 2, Elm Creek Twp; grading 15,650 cu. yds.; furn. and placing 11 cor. 4 concrete culverts, etc.	H. P. Edwards, County Auditor.
Indiana	Indianapolis	Sept. 9, 10 a.m.	Improving 2 streets and 3 alleys	H. W. Klausmann, City Engineer.
Indiana	Hammond	Sept. 9	Paving May st., Section B	P. J. Lyons, City Engineer.
New Hampshire	Concord	Sept. 9, 1 p.m.	Bldg. $7,900 gravel road at Gorham; trap rock, E. Kingston	H. C. Hill, State Engineer.
Ohio	Delaware	Sept. 10	Improving Simsbury Pike in Berlin and Berkshire Twps.	W. F. Whittier, County Surveyor.
Wisconsin	Racine	Sept. 10, 10 a.m.	Bldg. standard sidewalks, Orders Nos. 2022 and 2023	P. H. Connolly, Chm. Bd. Pub. Wks.
Ohio	Cleveland	Sept. 10, 11 a.m.	Repairing Lorain road at bridge approach and at Rockport	F. R. Lander, County Surveyor.
Ohio	Hamilton	Sept. 10	Oiling improved portion of Millville pike; cost $1,000	Board of County Commissioners.
Ohio	New Lexington	Sept. 10	Paving Park ave. with asphalt	Harry J. Stalter, City Clerk.
Pennsylvania	Nanticoke	Sept. 10, 7 p.m.	Brick paving on concrete or ash base, curb, etc., 980 lin ft.	Judson Abbott, Chm. St. Comr.
Pennsylvania	Charleroi	Sept. 10, noon	Paving 400 ft brick road, 10 ft. wide; resurface 6,000 ft., 16 ft. road	Theo. J. Allen, Township Engineer.
Ohio	Columbus	Sept. 10	Bldg. 14,000 sq. ft. cement sidewalks in Goodale Park	M. E. Price, Chairman Park Com.
Colorado	Denver	Sept. 10	Bldg. and repairing flume and wagon road at Creede	C. W. Comstock, State Engineer.
Colorado	Riverside	Sept. 11	Bldg. 21.5 miles 16 ft. wide macadam road, 5-ft. oiled strip	County Board of Supervisors.
New York	New York	Sept. 12, 11 a.m.	Granite block paving on concrete curb, grading, etc.	C. C. Miller, Pres. Bronx Boro.
Illinois	Epworth	Sept. 12	Bldg. 2 gravel or rock roads in Hawthorne	Robert Lutz, Town Clerk.
Ohio	Columbus	Sept, 12	Bldg. 8,342 ft. Jackson road requiring 2,780 tons crushed limestone or washed crushed gravel, spread and rolled	John Scott, Clk. Co. Comrs.
Delaware	Ft. DuPont	Sept. 12	Macadamizing section of Port Penn road	Constructing, Q. M.
New Jersey	New Brunswick	Sept. 12, 2 p.m.	Bldg. 2.015 miles gravel road from Spotts road, south	A. W. Bissett, Clk. Bd. Freeholders.
New York	Scarsdale	Sept. 12	Resurfacing 2.74 miles with bituminous macadam	Frank Sibley, Town Clerk.
Ohio	Euclid	Sept. 12, noon	Paving and improving Lawnview ave.	N. J. Brewer, Village Clerk.
Oklahoma	Muskogee	Sept. 12, 5 p.m.	Brick paving No. 3d and Lake sts.; Times Alley, Dists. 110 and 98; bit. concrete, Summit st., Dist., 109; asphalt Ash st., 92.	Chas. Wheeler, Jr., City Clerk.
New York	New York	Sept. 12, 11 a.m.	Improving three streets	C. C. Miller, Pres. Bronx Boro.
Minnesota	Montevidio	Sept. 12	Sidewalk construction on Nichols ave.	City Council
New Jersey	Millburn	Sept. 12, 8 p.m.	Bldg. Portland cement sidewalks and curb on certain streets	H. S. Acken, Chairman Twp. Com.
Pennsylvania	Wilkes-Barre	Sept. 12, noon	Building granolithic walk in and around Public Square Park, also removing stone coping, brick gutters, flag stone, etc.	Wilkes-Barre Park Commission.
New York	St. George, S. I.	Sept. 13, noon	Furn. broken stone at two city stables	Geo. Cromwell, Boro. Pres.
Arizona	Phoenix	Sept. 13	Bldg. Territorial highway between Bisbee and Douglas	Robt. A. Craig, Sec'y Bd. Control.
Kentucky	Cynthiana	Sept. 13	Grading, macadamizing, Bottle Grove ave., concrete walk, curb and gutter, Water st.	J. A. Dougherty, City Clerk.
New York	Olean	Sept. 13, 7.30 p.m.	Bldg. 15,000 sq. yds., also 800 sq. yds. vit. brick pavement, and 9,000, also 800 lin. ft. concrete curb and gutter, 2 streets	R. B. Fordsworth, City Engineer.
Texas	Houston	Sept. 13	Paving Main street road	J. B. Ashe, County Auditor.
Connecticut	Waterbury	Sept. 13	Bldg. cement walks and curbing, three roads	Benj. Chatfield, Supt. of Streets.
New York	St. George, S. I.	Sept. 13, noon	Bldg. cement sidewalks, reflagging, etc., various streets	Geo. Cromwell, Boro. President.
New York	Brooklyn	Sept. 14, 11 a.m.	Grading, curbing, laying sidewalks, etc.	Alfred E. Steers, Boro. President.
New Jersey	Tenafly	Sept. 14, 8 p.m.	Bldg. 1.536 miles Sylvan ave. or Blvd., in Tenafly	William P. Eager, Mayor.
Illinois	Clinton	Sept. 15	Brick paving 13 blocks, concrete base, sand cushion; sandstone curb	C. R. Griffin, City Clerk.
North Carolina	Whiteville	Sept. 15, 2 p.m.	Paving 12,000 sq. yds.	W. Ross Davis, Mayor.
Indiana	Vernon	Sept. 15, 11 a.m.	Bldg. 3 miles gravel road in Vernon township	County Auditor.
Ohio	Upper Sandusky	Sept. 15	Grading and paving a road	Peter Frank, Jr., County Auditor.
Utah	Salt Lake City	Sept. 16	Grading, curbing, guttering extension 15, 2d Ave., and Alto St.	H. G. McMillan, Chm. Bd. Pub. Wks.
Ohio	Wapakoneta	Sept. 16	Paving Auglaize st., from C. H. & D. Ry. to Main st.	Fred. A. Kliplel, City Clerk.
Pennsylvania	Harrisburg	Sept. 16, 2 p.m.	Bldg. 3 roads, 5,900, 5,500 and 1,076 lin. ft.	J. W. Hunter, State Hwy. Comr.
Wisconsin	Racine	Sept. 17, 10 a.m.	Concrete paving, 2 jobs; concrete curbing, 2 jobs	P. H. Connolly, Pres. Bd. Pub. Wks.
Ohio	Lakewood	Sept. 19	Paving Northland and Franklin aves., Evers Eng. Co., Arcade, Cleveland	B. M. Cook, Village Clerk.
Ohio	Linden Heights	Sept. 20	Bldg. sidewalks and gutters in village	Village Council.
Utah	Midvale City	Sept. 20, 8 p.m.	Bldg. cement sidewalks, 5,000 ft. long, Dist. No. 1	Hyrum Goff, Mayor.
Ohio	Toledo	Sept. 23	Repairing with macadam Door st., Adams Twp.	C. J. Sanzenbacher, Co. Auditor.
Claifornia	Hermosa Beach	Sept. 23	Warrenite paving, on 5-in. bituminous concrete base, $60,000.	E. McCoskey, City Clerk.
West Virginia	Huntington	Sept. 23, 1 p.m.	Excavating 2.480 cu yds., bldg. sewer in alley	John Coon, Comr. of Streets.
New Jersey	Ringoes	Sept. 26	Bldg. 2,924 lin. ft. macadam road, to Ringoes Station	Grant Davis, Co. Engr., White H. Sta.
Illinois	Peoria	Oct. 15	Resurfacing Perry ave. with asphalt	Geo. E. Simmons, Pres. Bd. Loc. Imp.
			SEWERAGE	
North Dakota	Carrington	Sept. 9, 7.30 p.m.	Bldg. septic tank, main outlet sewer, also sewers, Dist. No. 1	H. L. Winterer, City Auditor.
Pennsylvania	Yeadon	Sept. 9	Bldg. 8 and 15 in. t. c. sewers, etc., along Cobb's Creek	A. F. Dainon, Boro. Engineer, Darby.
South Carolina	Greenville	Sept. 10, 4 p.m.	Bldg. 6 miles 8-in. sanitary sewer extensions, etc.	C. P. Ballenger, City Engineer.
Michigan	Cadillac	Sept. 10	Bldg. sewage disposal plant, to include 2 small pumps	R. E. Eisner, City Engineer.
Kansas	Nat'l Sold. Home	Sept. 10, 2 p.m.	Installing new sewer line from hospital to main line	W. W. Martin, Treas. Sold. Home.
Michigan	Charlevoix	Sept. 10	Bldg. sewers for city	C. E. Dutton, City Clerk.
Colorado	Denver	Sept. 12	Bldg. 4 sanitary sewers, estimated cost $18,000	Geo. H. Lethman, City Engineer.
New York	New York	Sept. 12, 11 a.m.	Bldg. sewers in 242nd. st	C. C. Miller, Pres. Bronx Boro.
South Dakota	Vermillion	Sept. 12, 8 p.m.	Bldg. a sewer	C. L. Vaughn, City Auditor.
Colorado	Trinidad	Sept 12, 8 p.m.	Bldg. two 6-in. and 8-in. sewers, 3 sts.	I. O. Millikin, City Clerk.
Kansas	Garnett	Sept. 12	Bldg. sanitary sewer system, inc. disposal plants of septic tanks and contact filters; Burns & McDonnell, Engineers.	L. D. Pilkington, City Clerk.
New York	New York	Sept. 12, 11 a.m.	Bldg. sewers in W. 242d and 244th sts., Spuy. D. Pkwy.	C. C. Miller, Pres. Bronx Boro.
South Dakota	Aberdeen	Sept. 12, 8 p.m.	Bldg. sewers: 366 ft., 10-in.; 380 and 232 ft., 8-in. pipe	F. W. Raymond, City Auditor.
New York	Olean	Sept. 13, 8 p.m.	Bldg. vit. pipe sewer, etc., in Main st. from No. Union to Arch.	Geo. H. Luther, Chm. Bd. Pub. Wks.
New York	Brooklyn	Sept. 14, 11 a.m.	Bldg. sewers, etc., in various streets	Alfred E. Steers, Boro. President.
Virginia	Richmond	Sept. 15, 4 p.m.	Bldg. 3,800 ft. 8 to 11 ft., 3,000 ft. 8 ft. and 2,600 ft. 5 ft. brick or concrete sewer, part tunnel work in rock	Chas. E. Bolling, City Engineer.
Indiana	New Castle	Sept. 15, 7:30 p.m.	Bldg. sanitary sewer	L. M. Johnson, City Clerk.
Utah	Salt Lake City	Sept. 16	Bldg. pipe sewers in Extension No. 221, Floral ave	H. G. McMillan, Chm. Bd. Pub. Wks.
Ohio	Newburg	Sept. 17, noon	Bldg. sewers and water mains in various streets	J. W. Shimek, Clk. Bd. of Control.
California	Brawley	Sept. 19	Bldg. $18,000 sewer system	W. H. Whelan, City Clerk.
New Jersey	Chatham	Sept. 19	Bldg. joint disposal plant and trunk sewer	Councils of Madison and Chatham
Indiana	Columbus	Sept. 19, 7.30 p.m.	Bldg. 3,000 ft. vit. sewer and laterals	Wm. H. Rights, City Engineer.
Wisconsin	West Allis	Sept. 20, noon	Furn. and lay 3,338 ft., 18-in.; 1,034 ft., 15-in.; 4,240 ft., 12-in.; 9,634 ft., 10-in.; 6.234 ft., 8-in. pipes, 92 manholes, etc.	L. F. Fish, City Clerk.
Texas	El Paso	Sept. 20, 10 a.m.	Bldg. complete garbage refuse and sewerage disposal plant; sewerage plant capacity, 3,000,000 gals, daily, refuse distructors, 3 tons per hour	C. W. Fassett, City Clerk.

BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
			SEWERAGE (Continued)	
California	Oakland	Sept. 21, 11 a.m.	Bldg. storm sewer in San Pablo ave., $5,000 bond	W. B. Fawcett Sec'y Bd. Pub. Wks.
West Virginia	Huntington	Sept. 23, 1 p.m.	Bldg. lateral sewers in alley bet. 11th and 12th sts, 2 blocks	John Coon, Comr. of Streets.
Ohio	Nottingham	Sept. 24	Bldg. sewer in portion of Sackett ave	J. C. Steinicke, Village Clerk.
Michigan	Cadillac	Sept. 27	Bldg. sewage pumping station and equipment	Geo. Johnston, Clk. Bd. Pub. Wks.
New York	Thiells	Sept. 27, 10.30 a.m.	Bld. sewer and water systems for Letchworth Village	F. B. Kirkbride. 55 Wall st., N.Y.C.
Pennsylvania	West View	Oct. 1, noon	Bldg. main sewer and disposal plant, plans by Trimble & Miller, Fourth ave., Pittsburg	H. L. Donaldson, Boro. Sec'y.
			WATER SUPPLY	
North Dakota	Carrington	Sept. 9, 7:30 p.m.	Extension of water mains	City Clerk.
Illinois	Rossville	Sept. 9, 4 p.m.	Furn. deep well pump, boilers and pump house; cost $6,000	G. H. Prellaman, Pres. Bd Trus.
Illinois	Chicago	Sept. 9	Bldg. water service pipes in 3 sts.; supply pipes, 1 ave	C. A. V. Standish, Sec. Bd. Loc. Imp.
Colorado	Greeley	Sept. 10, noon	Improvement, Lower Latham reservoir	P.S. Hartung, Opera House Blk., Eng.
Iowa	Anamosa	Sept. 10	Drilling wells at county farm	Louis Gardner, Co. Aud.
Nebraska	University Place	Sept. 10, 8 p.m.	Constructing 6-in. water main	E. V. Westfall, City Clerk.
Minnesota	Austin	Sept. 12, 8 p.m.	Bldg. 12,000 ft. 16 or 18-in. c. i. gravity pipe line, and 290,000 gal. rein. concrete reservoir and small concrete dam, complete, including all auxiliaries	Wm. Todd, Sec'y Bd. W., E. & P. Com
Maine	Portland	Sept. 12, noon	Furn. and lay 14 miles of pipe from basin near Lake Lebago to Portland; 75,700 ft. 48-in. steel pipe; 21,600 tons c.i. pipe, 300 tons specials, Hazen and Whipple, New York City	L. B. Griffin, Chm. Trus. Water Dist.
Connecticut	West Hartford	Sept. 12	Laying 7 miles, 10-16-in main; pipe and lead furnished by city	E. E. King, Pres. Fire Dist.
New York	New York	Sept. 14	Furn. c. i. pipe, specials and valve box castings, Manh. & Bronx	H. S. Thompson, Com. W.S., G. & E.
Quebec	Montreal	Sept. 14	Furn. and lay 3,200 ft. 6 ft. steel pipe in river, bldg. concrete pier, dredging, etc., in River at entrance to aqueduct	L. N. Senecal, Sec'y Bd. City Comrs.
Kansas	Oakley	Sept. 14	Bldg. water works; Burns & McDonnell, K. C., Mo., Engineers	J. M. Owen, Mayor.
West Virginia	Parkersburg	Sept. 14, 7 p.m.	Bldg. pump well, pipe gallery, and foundations; furn. and erect two 4,000,000 gal. vert. pump engines and two 200 h.p. water tube boilers, 160 lbs. pressure	Frank Good, County Auditor.
Illinois	Toulon	Sept. 15	Furn. and erect 50,000 gal. steel tank and tower	Arthur Shinn, City Clerk.
Ohio	Dayton	Sept. 15, noon	Furn. f.o.b. cars Dayton: turbine pump, dir. con. to 3-phase,60 cycle, 220 volt A. C. motor; duplicate set of wearing parts	Wm. A. Budroe Sec. Dept. Pub. Serv
Iowa	Sioux City	Sept. 17, 9 a.m.	Installing deep well for tubing, centrifugal pumping outfit and station; G. B. Healey, Supt. of Parks	City Clerk.
Ohio	Newburg	Sept. 17	Bldg. water mains in 3 streets; sewers in 3 streets	Wm. H. Evers, Eng. Co., Anale, Cld.
Michigan	Detroit	Sept. 20, noon	Bldg. and erecting 25,000,000 gal. pumping engine	B. F. Guiney, Sec'y Bd. Wt. Comr.
Oklahoma	Haskell	Sept. 22, 2 p.m.	Furn. and lay 12,800 ft., 6-in.; 17,200 ft., 4-in. c. i. pipe, 25 fire hydrants; 7,650 lbs. fittings; 18 valves and boxes; galv. iron, pump house, two pumps, 500 gal. comb cap.; boiler, steel tower and tank, 120 ft. max. water tees, 60,000 gals cap.	Jas. T. Gates, Engr., Wagoner.
Ohio	Nottingham	Sept. 24	Bldg. water mains, Sackett ave. & St. Clair st., sewer in Ave	J. C. Steinicke, Village Clerk.
Maryland	Ft. Howard	Sept. 26	Bldg. 3 rein. concrete cisterns and piping, etc	Constructing Quartermaster.
New York	Thiells	Sept. 27, 10.30 a.m.	Bldg. water and sewer systems, $60,000 bond	F. B. Kirkbride, 55 Wall st., N. Y. C
Indiana	Evansville	Sept. 29, 10 a.m.	Furn. and erect 2 steam-driven pumps or pumping engines, 12,000,000-gal., lift 13 to 62 ft.; bids wanted on all types	H. L. Heilman, Sec'y Water Board.
			BRIDGES	
Maine	Augusta	Sept. 9, noon	Bldg. 762-ft. bridge over St. Johns river at Van Buren	State Comr. of Highways.
North Dakota	Fargo	Sept. 9, noon	Bldg. 46 ft., 30 ft., and four 20-ft. bridges, steel culvert, and repair 60-ft. bridge	Arthur C. Lewis, County Auditor
Pennsylvania	Charleroi	Sept. 10, noon	Bldg. 25-ft. iron bridge with concrete abuts. over Maple Creek	Henry Carson, Chm. Twp. Supervs.
Colorado	Denver	Sept. 10	Bldg. 2 concrete abutments for bridge at Ridgeway	C. W. Comstock, State Engineer.
South Carolina	Spartanburg	Sept. 12	Bldg. Kilgore wooden bridge over Enoree River	D. M. Miles, County Supervisor.
California	Oakland	Sept. 12	Bldg. bridge near Brightside; cost $10,700	Board of Supervisors.
Texas	Gonzales	Sept. 12	Bldg. bridge across Guadalupe river; cost $6,000	W. B. Green, Co. Judge.
Pennsylvania	Allentown	Sept. 12, 10 a.m.	Bldg. rein. concrete bridge over Coplay Creek, No. Whitehall Twp.; also removing present bridge	Bd. Comrs. of Lehigh County.
California	Eureka	Sept. 12, 2 p.m.	Bldg. highway bridge over Eel river, near Singley	Geo. W. Cousins, Clk. Bd. Super.
Indiana	South Bend	Sept. 12, 11 a.m.	Bldg. 2 concrete culverts, concrete I-beam bridge in city, and wing and head walls, Phillips culvert, Center twp	John W. Harbou, County Auditor.
Montana	Missoula	Sept. 13, 5 p.m.	Bldg. rein. concrete arch bridge over creek at Vine St	W. A. Logan, City Clerk.
Iowa	Clinton	Sept. 13	Bldg. culvert or bridge at three sts, in Lyons	W. E. Hayes, City Clerk
Ohio	Columbus	Sept. 14, 2 p.m.	Encasing in concrete east abutment of Dublin bridge, inc. 90 cu. yds. rock excav., 860 cu. yds. rein. concrete; 26,000 lbs. reinforcing steel	F. M. Sayre, County Auditor.
Pennsylvania	Harrisburg	Sept. 16, 2 p.m.	Bldg. 2 cement masonry and rein. concrete bridges	J. W. Hunter, State Hwy. Comr.
Ohio	Cincinnati	Sept. 16, noon	Bldg. concrete bridge over Toad Creek	F. Dreihs, Clk. Bd. Co. Comrs.
California	San Jose	Sept. 19, 11 a.m.	Bldg. rein. concrete bridge and fill in Campbell Creek	Henry A. Pfister, Clk. Co. Supervs.
Louisiana	Thibodaux	Sept. 23	Installing electric light plant; bldg. $4,000; mach., $35,000	R. J. Maquin, City Clerk.
			LIGHTING AND POWER	
Prince Edw. Id.	Charlottetown	Sept. 10	Supplying city with electric light for street and commercial purposes; state rates and the cap. per lamp for each	W. W. Clarke, City Clerk.
Massachusetts	Boston	Sept. 12, noon	Lighting sts. and alleys with gas incandescent mantle burners for 2 years, beginning Feb. 1, 1911	L. K. Rourke, Supt. of Streets.
Kansas	Oakley	Sept. 14, 3 p.m.	Bldg. electric light plant	J. A. Switzer, City Clerk.
Louisiana	Thibodaux	Sept. 23, noon	Remodeling electric light plant	H. N. Coulon, Town Clerk.
			MISCELLANEOUS	
Ohio	Rocky River	Sept. 9	Erecting municipal bldg., M. M. Gleishmann, Cleveland, Arch.	W. M. Dean, Village Clerk.
Pennsylvania	Tarentum	Sept. 9, 4 p.m.	Bldg. 15 ton garbage furnace	Geo. Douthett, Jr., Chm. Prop. Com.
Pennsylvania	Danville	Sept. 10	Bldg. retaining wall; Danville river bridge	H C. Blue, Clk. Co. Comrs.
California	Santa Ana	Sept. 10, 11 a.m.	Repairing detention home	County Clerk.
Florida	Ft. Barrancas	Sept. 12, 11 a.m.	Bldg. fire station at post	Constructing Quartermaster.
Iowa	Des Moines	Sept. 12, 9 a.m.	Extensive river improvement for flood protection along Des Moines and Raccoon rivers; 650,000 cu. yds. excav.	Neal Jones, City Clerk.
New York	New York	Sept. 12, 11 a.m.	Furn. 2 automobiles	C. C. Miller, Pres, Bronx Boro.
New Jersey	Camden	Sept. 12	Enclosing cell fronts with wire, also top and enclosure in rear of cells at County Jail	David Rankin, Chm. C. H. Com.
Iowa	Marengo	Sept. 14	Bldg. County Home, and building, sewerage, plumbing, etc. and isolated electric light plant	C. F. Chandler, County Auditor.
West Virginia	Wheeling	Sept. 15, 11 a.m.	Bldg. 3 concrete ice piers in Kanawha river	F. W. Altstaetter, Capt. U.S. Engrs.
Minnesota	Spooner	Sept. 15, 8 p.m.	Erecting village hall; F. L. Young & Co., Duluth, Archs.	M. S. Weeks, Village Clerk.
Kentucky	Louisville	Sept. 15, 2 p.m.	Bldg. underground conduit system for fire department; also furn. rubber-covered lead-encased fire alarm cables	E. T. Tierney, Chm. Bd Pub. Saf.
West Virginia	Wheeling	Sept. 16, 11 a.m.	Bldg. lock and dam No. 12, Ohio river, also lock and guide walls bear trap weirs and Chanoine weir, Dam 19	F.W. Altstaetter, Capt. U. S. Engrs.
Indiana	Mishawaka	Sept. 16	Erecting a firehouse	Jas. L. Kennedy, City Clerk.
Minnesota	Proctor	Sept. 19	Constructing a jail	Herbert I. Schill, Village Recorder.
Louisiana	New Orleans	Sept. 19, 11 a.m.	Bldg. rein. concrete sea wall on pile foundation, 2,700 ft. long and 14 ft. high, Lake Pontchartrain, also for filling in with earth dredged from lake, 400,000 cu. yds. behind wall	C. R. Kennedy, City Comptroller.
Indiana	Huntington	Sept. 19, 10 a.m.	Improving county jail	J. W. Weaver, County Auditor.
Texas	El Paso	Sept. 20, 10 a.m.	Bldg. complete garbage, refuse and sewage disposal plant; capacity of refuse distributors, 3 tons per hour; sewage plant, 3,000,000 gals. daily; Pub. Wks. Eng. Co., Beck bldg., Portland, Ore.	C. W. Fassett, City Clerk.
Washington	Aberdeen	Sept. 28, 5 p.m.	Clearing 250 acres, filling 1,500,000 cu. yds., construct. 4,000 ft. drain for improving tide lands	P. F. Clark, City Clerk
Indiana	South Bend	Oct. 4	Bldg. detention hospital	J. W. Harbou, County Auditor.

STREET IMPROVEMENTS

Mobile, Ala.—City will improve Water st. by grading, paving 22-ft. roadway with cement pavement, laying granite curbs, and constructing terra-cotta storm sewers and concrete culverts.—J. T. Schley, President, Board Public Works.

Montgomery, Ala.—County has rejected all bids for building extension of Fairview ave. to the Woman's College as excessive; work shall be done by J. T. Bullen, County Engineer.

Montgomery, Ala.—City will pave Clanton st. with gravel; sidewalks on Lawrence and Union sts. with hexagon tile or Schillinger pavement, including all necessary granite curbing, grading, storm sewers and brick walls in connection; Clitherell ave. with brick, asphalt, bitulithic or other material.—Gaston Gunter, Mayor.

Ft. Smith, Ark.—City proposes to pave Garrison ave. with brick or asphalt; cost about $25,000.—M. H. Reed, City Engineer.

Marianna, Ark.—Lee County has decided to expend $100,000 for good roads and bridges.

Pasadena, Cal.—Council has rejected all bids and will readvertise for paving of California st.

Bartow, Fla.—City has decided to pave Florida ave. from Main to Stanford st.

Key West, Fla.—Board of Public Works has decided to call for bids for bonds for paving streets.

Clinton, Ill.—Cost of paving Third ave. with vit. brick has been estimated at $5 659.56; five-inch bed of concrete.

Macomb, Ill.—Bids will soon be received for two blocks of brick paving.—C. B. Smithers, City Clerk.

Moline, Ill.—Bids will soon be asked by city for 70 blocks of cement walks in various parts of the city.—H. M. Oldipest, City Clerk.

Murphysboro, Ill.—Bids will soon be received by Board of Local Improvements for vit. brick paving, concrete foundation, in North st.; cost $44,000.—George Kennedy, City Engineer.

Peoria, Ill.—Board of Local Improvements has decided to pave North Elizabeth ave. to city limits.

Franklin, Ind.—Union Township has voted to build three-mile road; cost, $5,000.

Council Bluffs, Ia.—Council has passed a resolution providing for paving of Main st. with brick.

Georgetown, Ky.—Council has ordered bids advertised for paving sidewalks.

Baton Rouge, La.—Citizens are favorable to $375,000 bond issue for good roads, drainage and erection of court house.

New Orleans, La.—City Engineer W. J. Hardee is considering paving of Hancock st. with Hassam concrete. Belmont pl. with pitch lake asphalt, North Robertson, Clara and Hennessey sts. with asphalt.

Athol, Mass.—Town has appropriated $300 for survey of Main st.

Lawrence, Mass.—Voters of Groveland have appropriated $5,000 for macadamizing School st., distance of two miles.

Detroit, Mich.—Council has recommended paving of Waterloo st. with wood block; cost $8,012; also for construction of 20-ft. alley, from Cass ave. to 1st st. with brick, cost $1,665; all on concrete foundation with Medina, Berea or other approved curbing.

Albert Lea, Minn.—City proposes to pave College and other streets early in the spring; plans have been prepared for curbing several streets; estimated cost $4,204.

Brainerd, Minn.—Cement paving on 3d ave. is being urged.

Iona, Minn.—Council has ordered sidewalks on Main st. and McDonnell ave.

Rochester, Minn.—Council has decided that Broadway must be paved.

Brandon, Miss.—Citizens have voted $30,000 bonds for good roads.

Jackson, Miss.—Councilmen H. Kimbal and R. W. Maxey have inspected pavements in Birmingham and New Orleans.

Okolona, Miss.—Chickasaw County is considering $50,000 bond issue for road improvements.

Carthage, Mo.—Improvement of Grand ave. is being urged.—J. P. Leggett, Mayor.

Kansas City, Mo.—Council has passed seven paving ordinances and seventeen for repairing streets.

Bozeman, Mont.—Council has ordered paving of East Main st.

Trenton, N. J.—State Road Commissioner Gilkyson has promised East Amwell Township Committee State aid for macadamizing of road between the town and the station, about mile in length.

Binghamton, N. Y.—Division Engineer Paul B. McLeoud has announced that work to be undertaken in his division next season will include Whitney Point, Upper Lisle, Glen Aubrey and Windsor roads; Whitney Point road will be 4.25 miles in length and will be constructed at a cost estimated at between $44,000 and $50,000.

Schenectady, N. Y.—Bids have been ordered advertised for paving Wall st., grading Elder st., laying sidewalks on Broadway, where property owners have not yet laid walks, and laying water mains in Maxon road.

Town Creek, N. C.—Town Creek Township, Brunswick County, has voted $15,000 road bonds.

Fargo, N. D.—City contemplates extensive paving next year; about 60,000 sq. yds. cedar block paving to be replaced.—F. L. Anders, City Engineer.

Clyde, O.—City will soon ask for bids for 7,000 sq. ft. of brick pavement.—H. M. Bacon, Village Clerk.

Covington, O.—Council has ordered paving of Madison ave. with wood block.

Hamilton, O.—The Board of County Commissioners have approved plans of the Ohio State Board of Public Works for macadamizing two miles of Columbia Bridge road, leading to Venice; cost $12,000.—H. B. Grevey, City Clerk.

Liverpool, O.—Improvement of Bradshay ave. at cost of $10,000 is being considered.

Massillon, O.—Bids are being asked for paving North Erie and East Cherry sts.

Struthers, O.—Bids will be received Sept. 21, noon, for $2,000 bonds for paving Bridge st.—L. S. Creed, Village Clerk.

Youngstown, O.—County Commissioners are planning widening of Early road.

Chickasha, Okla.—Council is preparing to let contract for eight miles of cement sidewalks where paving has been laid.

Enid, Okla.—City is considering paving of sidewalks.—C. F. Randolph, Mayor.

Cottage Grove, Ore.—Citizens have voted bonds for street improvements.

Danville, Pa.—City will macadamize, with State aid, road leading from the State Asylum property to borough line.

Philadelphia, Pa.—Director Stearns, Department of Public Works, and Chief Benson, of Highway Bureau, have decided that $1,195,000 will be needed next year for street work.

Rogersville, Tenn.—Hawkins County Commissioners will expend $10 000 in macadamizing road from Camy Creek to Alum Well.

Big Spring, Tex.—Howard County will vote Sept. 26 on $100,000 bonds for road construction.

Dallas, Tex.—Dallas County will improve Queen's Highway.—O. P. Wolcott, County Commissioner.

Miles, Tex.—Road District No. 2 of Runnels County will vote Sept. 24 on $25,000 bonds for construction of roads.

Wharton, Tex.—Citizens have voted $15,000 bonds for improving streets.

Salt Lake City, Utah.—Plans for rebuilding road in Big Cottonwood Canyon around Maxfield mine have been submitted to Board of County Commissioners.

Richmond, Va.—Council has decided to appropriate $4,000 for improvement of Fairmont st. road and $4,700 for improvement of Broad st. road.—Charles E. Bolling, City Engineer.

North Yakima, Wash.—Plans have been made for laying approximately $200,000 of pavement next year.

Tacoma, Wash.—Council has adopted four street improvement resolutions and passed three other resolutions.

Menasha, Wis.—Council has decided to pave Broad st. early next spring.

CONTRACTS AWARDED

Birmingham, Ala.—County road work: Johns and county line, to T. W. Wright, $4,273; Lewisburg and Walker Chapel, to Felix J. Ellard, $1,022; Water Works Hill, to A. F. Bearden, $1,486; Short Creek Hill, Vines & Howton, $1,285; Shoal Creek, Parker & Cox, $865; Brookside and Mineral Springs, Wade & Bradford, $2,041; Shades Mountain and Pool's Ford, H. W. Parker, $1,868.

Ft. Morgan, Ala.—To W. C. Pease, Atlanta, Ga., to construct roads, walks, etc., $5,744.

Gadsden, Ala.—Laying new sidewalks in business section to Harry Hopkins; about $10,000.

Denver, Col.—To Commonwealth Construction Co., to grade, curb and construct sidewalks in North Side Improvement District No. 13; cost about $70,019.

Hartford, Conn.—State highway work as follows: Town of Sherman, 6,785 ft. graded telford road, to Goodman & Trumball, Litchfield, $19,247.84 for entire grading, with $1 additional per lin. ft. for telford; Town of Bridgewater, 11,835 lin. ft. of graded telford road, to Goodman & Trumball, $25 240 for entire grading, with $1 additional per ft. for telford; Town of Woodstock, 8,500 lin. ft. of graded telford road, to A. Brazos & Sons, Middletown, $12,325 for entire grading, with 40c. per lin. ft. for telford; Town of Bristol, 2,251 lin. ft. of macadam telford road, to Pierson Engineering and Construction Co., 98c. per sq. yd. for macadam and $1.40 per sq. yd. for telford; North Branford, 15 327 lin. ft. macadam telford, to A. Brazos & Sons, $1.85 for macadam and $2.20 for telford; Town of Durham, 18,237 lin. ft. macadam and telford, to Frank Arigoni & Bro., Durham, $2.27 per lin. ft. for macadam and $2.95 for telford; Town of East Haven, 3,178 lin. ft. of macadam telford on Foxen road, to C. W. Tryon, Meriden, $2.20 for macadam and $2.75 for telford; same town, 7,670 lin. ft. macadam telford on Thompson ave., to Robert H. Daley, New Haven, $1.49 for macadam and $2.25 for telford; North Haven, three sections of macadam aggregating 2,200 lin. ft., to Lawrence Bruce, North Haven.

Lake City, Fla.—About five miles of cement sidewalks, to Bigler Bros., Goldsboro, N. C.

St. Petersburg, Fla.—Sidewalk for Moffat's subdivision: H. A. Farmer, 13½c. and 11c. for a tile walk; paving, grading and curbing of Fourth ave., North, Georgia Engineering Co., granite curbing 40c., brick paving, $1.40 per sq. yd., grading 33c. per cu. yd.; Central ave. to W. C. Henry, granite curbing, 45c.; to Georgia Engineering Co., $1.70 for brick on edge; grading 21½c.

Boise, Ida.—Sidewalk and curbing, Dist. No. 32; sub-district No. 1 to Coast Contracting Co., Tacoma, 9,350 lin. ft. of sidewalk, 63c., 26,000 lin. ft. curbing, 84c.; total $22,590.50; No. 2, to same, 20,000 lin. ft. sidewalk, 63c., 21,500 lin. ft. of curbing, 80c.; No. 3, to same contractor at same prices.

Carmi, Ill.—To. F. R. Roemer, Belleville, and Harry McKay, Mount Vernon, Ind., for installation of 20,000 ft. of granitoid walks.

Decatur, Ill.—Improvement of Mercer st., hard repressed vit. brick, to Lisle F. Hunt, $10,671.88.—Albert Leach, City Clerk.

Morris, Ill.—To Keys & McNamara, La Salle, for street improvements, $37,238.

Peoria, Ill.—Paving of California ave. from Armstrong to Illinois, to D. A. Myers, $4,210.40.

Huntington, Ind.—Construction of concrete sidewalk on Washington st. and for a concrete sewer, to J. M. Coffee, Huntingburg, at the following prices: Sewer, $7 per cu. yd.; sidewalk, 12c. per sq. ft.; curbing and gutter, 60c. per cu. yd.; three other bidders as follows: Sullivan Cement Stone Co., Sullivan, sidewalk, 12½c. per sq. ft.; curbing and gutter 64c. per lin. ft.; Traylor & Krempp, Jasper, sidewalk, 12½c. per sq. ft.; sewer, $8.50 per cu. yd.; curbing and gutter, 53c. per lin. ft.; Warrick Contracting Co., sidewalk, 11¾c. per sq. ft.; curbing and gutter, 52c. per lin. ft.

Muncie, Ind.—To Wm. Birch, 50c. per lin. ft. for construction of a 5-ft. cement sidewalk on both sides of 11th st.; to Wm. Torrence, for construction of a cement alley between Franklin and Liberty sts., $2.10½ per lin. ft.

South Bend, Ind.—Grade, curb and walk on Duey ave., to Philip Robaige; grade, curb and walk on Calvert and North St. Peter sts., to T. M. Bowers, and curb on Corby st., to J. A. Welis.

Vincennes, Ind.—Improvement of Hickman st. from the river to 13th st., to Foulkes Contracting Co., Terre Haute; concrete walks 8c., stone curbing 36c., alley crossings 10c.; two competitors: Chas. Hamke and Edward Pennington, city; former's bid was 8¾c. for concrete walks, 37c. for curbing and 10c. for alley crossings; latter bid 8¾c. for concrete walks, 36c. for curbing and 9c. for alleys.

Kansas City, Kan.—Paving Quindaro blvd., from 17th to 19th st., to Kansas Bitulithic Co., 5,850 sq. yds.

Louisville, Ky.—Alley paving contracts were divided among three contractors: to G. W. Gosnell & Co., five blocks; to L. R. Figg & Co. four blocks, and Jefferson County Construction Co., one block; vit. brick, $1.90 to $1.99 sq. yd.; bids on six blocks were rejected because they were too high.

Natchitoches, La.—Two miles of additional concrete sidewalk, to Price Co.

Baltimore, Md.—To Patrick Reddington & Sons, 321 St. Paul st., $5,679.70 to pave Park Ter. from Park ave. to Robert st. with vit. brick blocks.

Cambridge, Mass.—To Warren Bros. Co., for paving such streets as may be designated by Superintendent of Streets during season of 1910 with bitulithic.

Duluth, Minn.—Paving Irving pl., Seventh st. and Clover st. with granitoid blocks to John A. Johnson, $27,033.45; to P. McDonel for paving Eleventh ave. East with asphalt, $9,870.90.

Holly Springs, Miss.—To Frank F. Conover, Grenada, for proposed construction of concrete sidewalks on all streets of city.

St. Louis, Mo.—Paving with bitulithic, to Granite Bituminous Paving Co; Arsenal st., 8,630 sq. yds.; Semple st., 5,998 sq. yds.; Union st., 10,003 sq. yds.; Bent ave., 4,780 sq. yds.; Porlis ave., 3,477 sq. yds.

Elizabeth, N. J.—Paving De Hart pl., to Jas. J. Potts, $12,628.02.

New Brunswick, N. J.—Graveling and grading of Thomas and Prospect sts., in South River, to Collins & Gundren, lowest bidders.

Herkimer, N. Y.—To Warren Bros. Co., additional contract for paving Prospect st. with bitulithic.

Rome, N. Y.—To Warren Bros. Co., for paving E. Willett and Elm sts. with bitulithic.

Schenectady, N. Y.—Paving of Wall st., to the Schenectady Contracting Co.; laying water mains in Maxon road and for sidewalks in Broadway, to Beckwith Bros.

Athens, O.—To W. S. Bower, city, for paving portions of Maplewood Drive, Stinson and Campbell aves. and Cable st., $9,946.

Bryan, O.—Building road, Jefferson Township, to Ohio Paving Co., Toledo, 1,000 ft., with tarvia, $10,949.

Cadiz, O.—Building Piedmont road, to J. P. Warnick, city, $14,847.25.

Columbus, O.—To John M. Snouffer, for improvement of Hilliard and Dublin road, distance 12½ miles, $25,221.

Dayton, O.—Macadamizing 2 64 miles of Xenia pike, to Horah Kunkle, 2135 N. Main st., $15,250.

Defiance, O.—Building Holgate road, to Chas. Shindler and W. E. Davis, city, $5,840, North Baltimore stone.

Johnstown, O.—Constructing about 15,000 sq. yds. pavement and 8,000 lin. ft. curb, to J. N. Kessner Construction Co., Coshocton, $26,708.

Mansfield, O.—Improvement of West 3d st. by resurfacing with macadam and oil, to Gandert & Son, $4,262.70; grading and laying sidewalks of flagstone on Helen ave., to E. S. Getting & Bro., $3,098.75.

Millersburg, O.—Building Millersburg and Berlin road, to Spence Bros., Cleveland, $8,300.

Portsmouth, O.—Building Portsmouth and Columbus road, to Kaps Bros., city, $8,632, brick with asphaltic cement filler.

Oklahoma City, Okla.—By Park Board, to E. T. Bryan, city, $8.771 for three miles of work on Oklahoma City Blvd.

Corvallis, Ore.—Contract for 44,000 sq. yds. bitulithic to Warren Construction Co., 59 Temple pl., Boston, Mass.

Grant's Pass, Ore.—To Warren Construction Co., 59 Temple pl., Boston, Mass., for 3,500 sq. yds. bitulithic pavement.

Klamath Falls, Ore.—To Warren Construction Co., for paving with bitulithic, 50,000 sq. yds.

Monessen, Pa.—Paving with brick 9th st., to Hallam Construction Co., Washington, about $6,500.

North Yakima, Wash.—To Independent Asphalt Paving Co., Seattle, for paving with asphalt portion of 11th ave., $25,774.

Charleston, W. Va.—To Moore Construction Co., city, $3,900 to lay cement sidewalks surrounding and extending through Capitol grounds.

Keystone, W. Va.—To J. D. Shott & Co., Bluefield, for street paving.

Askeaton, Wis.—Hauling crushed stone on the roads, to Gilson Bros. and Farrell & Dickson, 74c. per yd. on five-mile haul and 34c. per yd. on 2½-mile haul.

Janesville, Wis.—To G. D. Cannon, 48c. per ft. for cement gutter and curb work on 12 streets.

Brantford, Ont., Can.—Paving Darling st. with bitulithic, to Warren Bituminous Paving Co.

BIDS RECEIVED

Santa Ana, Cal.—Furnishing city with steam roller for use in street improvement: machine known as the Kelly-Springfield roller was offered in six varying prices, G. A. Rogers had two offers. Dunning Iron Storage Co. had one, Buffalo Steam Roller Co. one, the J. I. Case Co. two, and the Henshaw-Buckley Co. two; machines ranged in price all the way from $2,475 to $3,850.

Boise, Ida.—Street paving, asphalt, (a) 37,978 cu. yds. excavation, (b) complete pavement without guarantee, 147,911 sq. yds., (c) completed asphalt pavement with five-year guarantee, same amount, (d) gutter plates in place, 294,100 lbs., (e) completed oil macadam along street car tracks, 14,595 sq. yds., (f) total bid without guarantee, (g) total bid with five-year guarantee: Coast Contracting Co., Tacoma, Wash., (a) $22.786.80, (b) $257,365.14, (c) $279,551.79, (d) $24,998.50, (e) $19,557.30, (f) $324.707.74 (g) $346,894.39: P. J. McHugh, Seattle, Wash., (a) $22.786.80, (b) $272,156.24, (c) $272,156.24, (d) $14,705, (e) $18,243.75, (f) $327 891.79, (g) same bid; Pacific Paving Co., Seattle, Wash. (a) $15,191.20, (b) $248,490.48. (c) $263,281.58, (d) $17,646, (e) $20,433. (f) $301,760.68, (g) $316,551.78; Barber Asphalt Co., city, (a) $18,989, (b) $245,532.26, (c) $260,323.36, (d) $17,646 (e) $20,433. (f) $302,600.26, (g) $319,371.36; granitoid paving, R. S. Blome Co., Chicago, Ill., excavation, 35,663 cu. yds., $23,161.40; complete granitoid pavement without guarantee, 147,911 sq. yds., $332,799.75; with five-year guarantee, $340,195.30; with 10-year guarantee, $354,986.40; gutter plates in place, 249.100 lbs., $17,646; complete macadam paving without guarantee, no bid; total bid without guarantee, oil macadam not included, $373,607.20 same, five-year guarantee, $381,002.75; 10-year guarantee, $395,793.85; bitulithic paving, (a) excavation, 35,633 cu. yds., (b) completed concrete pavement, 147,911 sq. yds., (c) gutter plates in place, 294,100 lbs., (d) completed oil macadam pavement along street car tracks, 14,595 sq. yds., (e) total bid: J. Gustaffson, city, (a) $24,943.10, (b) $170,097.65, (c) $15,440.25, (d) $14,595, (e) $225,076; Coast Contracting Co., Tacoma, Wash., (a) $21,379.80, (b) $161,222.99, (c) $24,998.50, (d) $19,557.30, (e) $227,158.59; P. J. McHugh, Seattle, Wash, (a) $21,379.80, (b) $199,679.85, (c) $14,705, (d) $18,243.75, (e) $254,008.40; bitulithic paving, Warren Construction Co., Portland, Ore., excavation, 35,633 cu. yds., $21,379.80; completed bitulithic with stone base without guarantee, 147,911 sq. yds., $292,863.78; completed bitulithic pavement with stone base and five-year guarantee, $303,217.55; completed bitulithic pavement with stone and 10-year guarantee, $318,008.65; completed bitulithic pavement with concrete base and five-year guarantee, $318,008.65; completed bitulithic pavement wtih concrete base and five-year guarantee, $318,008.65; completed bithulithic pavement with concrete base and 10-year guarantee, $332,799.75; gutter plates in place, 249,100 lbs., $13,234.50; complete oil macadam along street car tracks, 14,595 sq. yds., $22,914.15; total bid stone base without guarantee, $350,392.23; total bid stone base wtih five-year guarantee, $360,746; total bid stone base and 10-year guarantee, $375,537.10; total bid concrete base without guarantee, $365,183.33; total bid concrete base with five-year guarantee, $375,537.10; total bid concrete base with 10-year guarantee, $390,328.20; no bids received on brick pavement.

Alley paving, District No. 5, (a) excavation, 1,790 cu. yds., (b) completed pavement, 6,960 sq. yds.: S. Birch & Sons Contracting Co., Salt Lake, (a) $1,163.50, (b) $8,908.80; Shaffer-Clark Co., Ltd., city, (a) $1,114.27, (b) $8.404.20; Coast Contracting Co., Tacoma, (a) $1,253, (b) $7,656; W. H. Terry, city, (a) $1,400.67, (b) $7,830; Jos. Sullivan and Nelson Davenport, (a) $1,154.55, (b) $8,004.

Pekin, Ill.—Paving Second st. and Washington st.; Jansen & Zoeller, city, $31,065.50, Streator brick; Illinois Cement Construction Co., Springfield, $30,764, Alton brick.

Annapolis, Md.—Paving West st.: To Jefferson st. only—Stehle & McGuckian, $7,256.90; United Engineering & Construction Co., $7,930.15; George Jewell, $6,077.10; Wm. E. Feldmeyer, $5,736.52; D. M. Andrews, $6,452.65. To the city limits—Stehle & McGuickian. $8,183.43; United Engineering & Construction Co., $8,927.61; George Jewell, $6,847.71; Wm. E. Feldmeyer, $6,465.53; D. M. Andrews, $7,302.79.

Westfield, Mass.—Laying asphalt in Park sq., Barber Asphalt Paving Co., about $20,400; paving includes about 7,900 sq. yds., in addition to curbing; bid was $2.23 per yd. for laying the asphalt and 22c. per yd. for shaping up the street.

Albany, N. Y.—Paving 6,000 sq. yds. on 12th st.: (a) sheet asphalt, (b) vit. brick, (c) cement concrete, (d) granite block: John H. Gleason & Co., (a) $20,823, (b) $17,974, (c) $15,460, (d) $22 842; McKenna & Walsh, (b) $18,261; Walter E. Hassam, (c) $16,450, (d) $24,069.

New Brighton, S. I., N. Y.—Furnishing and laying water mains and appurtenances in Southfield blvd., Parkinson, Grassmere and other streets, Murphy Bros., Bath Beach, Brooklyn, lowest bidders, $210,442; 5,000 tons st. c.-i. pipe, $30.71; 200 tons c.-i. castings, $50; 100 tons c.-i. castings, $44; 42,500 lin. ft. 24, 20 and 16-in. pipe. 30c.; 20,000 lin. ft. 12-in. pipe, 25c.; 8,000 lin. ft. 8-in. pipe, 24c.; 1.500 lin. ft. 6-in. pipe, 18c.; 25 cu. yds. brick masonry, $2; 25 cu. yds. concrete masonry, $5; 2,000 lbs. wrought iron, 3c.; 100 cu. yds. broken stone, 50c.; 40 sq. yds. granite block, $1.25; 300 sq. yds. granite block, 30c.; 650 sq. yds. asphalt block, $2.25; 380 sq. yds. iron slag, $2.70; 9,000 sq. yds. macadam, 25c.; 1,000 cu. yds. extra excav., 50c.; 100 cu. yds. rock excav., $2; 200 lin. ft. vit. pipe, 50c.; totals of other bids: New York and Port Chester Contracting Co., 215 W. 125th st., New York City, $216,495; L. D. Gregory, 342 E. 125th st., New York City, $227,259; J. H. Holmes, 87 Nassau st., New York City, $287,060; Daly, McAvoy & Crippo, 303 E. 127th st., New York City, $242,973; Soraci Contracting Co., 170 Broadway, New York City, $228.496.85; J. J. O'Connell, New York City, $232,255; Hagerty Drummond, 41 Park Row, New York City, $216,812; R. E. Henningham, 1 Madison ave., New York City, $228,175; Jas. Johnson Sons, West New Brighton, S. I., $230,853.

New York, N. Y.—Excavating earth, rock and other material and regulating and grading in John Jay Park between 76th and 78th sts., P. J. Kane, 735 East 150th st., $62,320; Charles L. Doran, 1015 Wilton ave., $70,930; La Mura Contracting Co., $52,890; Patrick Reddy, Lenox ave. and 111th st., $56,580; Haggerty & Drummond, $67,650; Cooper & Evans, 220 Broadway, $54,120; Thos. Crimmins, 444 East 69th st., $63,243; Conavan Bros., $81,180; Cunningham & Kearns, 438 East 9th st., $53,710.

St. George, S. I., N. Y.—Extension of Castleton ave., from the intersection of Columbia st., West New Brighton, to Jewett ave., Port Richmond, lowest bidder John E. Donovan, Elm Park, $21,913.90.

Utica, N. Y.—Paving: Barber Asphalt Paving Co., Rudolph Pl. from Humbert ave. to South st. with sheet asphalt pavement with natural stone curb and walks, $2,717; sheet asphalt pavement with artificial stone curbs and walks, $2,427; Thomas st., sheet asphalt pavement with natural stone curb and walks, $6,012.65; sheet asphalt pavement with artificial stone curb and walks, $5,392.65.

Bryan, O.—Constructing Section No. 2, State Highway C, Petition No. 143, Jefferson Township road, as follows: G. W. Farison, Archbold, waterbound and 1,000 ft. with acceptable tar or asphalt treatment, $11,050; the Ohio Paving Co., Toledo, waterbound and 1,000 ft. with carbovia or tarvia, $10,999; the Ohio Paving Co., 1,000 ft. with Keystone Refining Co. asphalt binder, $10,949; the Ohio Paving Co., 1,000 ft. with tarvia, $10,949.—James C. Wonders, State Highway Commissioner.

Cadiz, O.—Improvement of Piedmont road in Harrison County, from the plans of the State Highway Department, as follows: Moore & Stahl, St. Clairsville, $15,000; J. P. Warnick, Cadiz, $14,847; constructing in Harrison County, State Highway D, Petition No. 258 Piedmont road, as follows: Moore & Strahl, Clairsville, $15,000; J. P. Warnick, Cadiz, $14,847.—James C. Wonders, State Highway Commissioner.

Columbus, O.—Improvement of Portsmouth and Columbus road as follows: Kaps Bros., Portsmouth, brick with cement grout filler, $8,726; brick with sand filler, $8.538; brick with asphalt cement filler, $8,632; J. A. Grimes, Portsmouth, brick with cement grout filler, $8,884; brick with sand filler, $8,300; brick with asphaltic cement filler, $8,884; S. Monroe & Sons, Portsmouth, brick with cement filler, $9,500; brick with sand filler, $8,850; brick with asphaltic cement filler, $9.500; Kelly Bros., Portsmouth, brick with cement grout filler, $9,500; brick with sand filler, $9.300.

Columbus, O.—Paving of subways under railway structures; for Contract No. 7, for paving subways under the Baltimore and Ohio Railroad crossings, the bids were: D. E. Sullivan & Son, Athens, for Portsmouth block with cement filler, $47,143; tar filler, $47.313; asphalt filler, $48,248; W. H. Lutchenberg & Co., Athens, Nelsonville or Trimble block with cement or tar filler, $56,530; asphalt filler, $58,004; Contract No. 8, for paving the subways under crossings of the P. C. C. & St. L. R. R., Geigle, Garnes & Co., Columbus, Athens, Portsmouth or Trimble block with cement or tar filler, $7,453; asphalt filler, $7,779; H. J. Shaw, Columbus, Athens or Nelsonville block with tar filler, $7,799; asphalt filler, $7,962; William H. Lutchenberg & Co., Athens, Nelsonville or Trimble block, tar or cement filler, $8,706; asphalt filler, $9,032.

Defiance, O.—Constructing State Highway C, Petition No. 260. Holgate, Schneider Bros., city, $5,929; Charles Shindler and W. E. Davis, city, $5,840.

Millersburg, O.—Constructing State Highway C, in Holmes County, Petition No. 265, Millersburg and Berlin road, as follows: Spence Bros., Cleveland, $8,300; Lee & Griggs, Millersburg, $9,279.

Springfield, O.—East High st., Edward Ryan, lowest bidder, Trinidad land asphalt with Bolin brick between tracks, with cement curb and gutter, $24,748; M. J. Hannon's low bid on Bolin block for West Main st. has been declared regular, though he failed to bid on asphalt filler; bid for entire street is $61,391, with sandstone curb and gutter; Edward Ryan next lowest bidder, offering Twentieth Century block for $62,395, with sandstone curb, and $1,700 more with limestone curbing; lowest asphalt bid on this street is also by Mr. Ryan; with this material the work will cost $65,541; Mr. Ryan is low on College ave. with sheet asphalt and Bolin block between the tracks, $11,100; asphalt block costs only $13,662 on this street.

Scranton, Pa.—Paving Luzerne st., Railroad to Keyser Creek, Joseph L. Dunn & Co., asphalt per sq. yd., $1.63; stone block per sq. yd., $2.25; R. C. Ruthven, $1.95; MacDonald Construction Co., $1.65; Warner-Quinlan Co., $1.95; Taylor ave., R. C. Ruthven, $1.95; MacDonald Construction Co., $1.70; Warner-Quinlan Co., $1.89; Gibson st., stone block and brick, MacDonald Construction Co., $2.10; Alder st., Joseph L. Dunn & Co., $1.80; R. C. Ruthven, $1.85; MacDonald Construction Co., $1.70; Warner-Quinlan Co., $1.89.

Dallas, Tex.—Paving Camp st.: Municipal Paving Co., for vitrified blocks with asphalt filler on a 6-in. gravel-concrete foundation, $3 per sq. yd. with five years' maintenance; for creosoted pine blocks on 1-in.

sand cushion on concrete foundation, $3.40 per sq. yd. with five-year maintenance; $3.30 without; D. J. Grigsby, for vitrified blocks on 6-in. gravel-concrete foundation, without maintenance, $2.70 sq. yd.; for creosoted pine blocks on sand cushion and concrete base, $3.30; Texas Bitulithic Co., for vitrified blocks, five-year maintenance, $2.80, without maintenance, $2.70; for creosoted pine blocks with asphalt filler on concrete base and sand cushion, $3.38 with five-year maintenance, $3.28 without maintenance.

SEWERAGE

Mobile, Ala.—City will lay terra-cotta storm sewers along Water st.—J. T. Schley, President Board of Public Works.

Tuscaloosa, Ala.—Council has adopted ordinance for laying several miles of sanitary sewers; City Engineer W. H. Nichols is preparing maps and specifications; cost $30,000.

San Francisco, Cal.—Board of City Supervisors has passed ordinances providing for construction of sewers as follows: Sec. C of North Point main sewer, $105,000; Sec. F of North Point main sewer, $105,000, and for sewers in Ingleside Dist., $16,000.

Tulare, Cal.—All bids rejected for construction of a sewer system from plans of Haviland & Tibbetts, Oakland; Higdons Transfer Co., lowest bidder, at $59,234.—E. Oakford, City Clerk.

Corning, Col.—W. F. Lining, Red Bluff, is preparing plans for sewer and water system; cost $69,000.

Palisade, Col.—S. B. Quinlan, Denver, has petitioned Council for franchise for a sewer system.

Centreville, Del.—Plans for the construction of a sewerage system are being put into definite form by Town Commissioners, Messrs. Alfred Green, Ezekiel M. Forman and Dr. Horace M. Davis.

DeKalb, Ill.—City proposes to construct sewage disposal plant from plans of A. R. Russell.—P. N. Joslin, Secretary Board of Local Improvements.

East Moline, Ill.—Plans and estimates for construction of a sewer system in the business district between 1st and 15th sts. have been submitted to Council by City Engineer H. G. Paddock; cost $20,000.

St. Charles, Ill.—Construction of proposed pipe sewer system for the city will cost $90,000.—G. M. Lamb, City Engineer.

Michigan City, Ind.—Cost of completing Tryon Dist. sewer has been estimated at $5,689.

Dewitt, Ia.—Plans are being prepared by Iowa Engineering Co., Clinton, for about 4½ miles of 15-in. pipe sewers and disposal plant; cost $25,000.

Mt. Vernon, Ia.—Plans are being prepared by Iowa Engineering Co., Clinton, for about 4½ miles of 15-in. pipe sewer and disposal plant; cost $25,000.

West Liberty, Ia.—Plans are being prepared by Iowa Engineering Co., Clinton, for about 4½ miles of 15-in. pipe sewer and disposal plant; cost $25,000.

Duluth, Minn.—Council has asked for estimates of cost of proposed plan for new outlet for Woodland sewer.

Marble, Minn.—Council is considering construction of sewers.

Wallhill, Neb.—Construction of sewer system is being considered.

Westwood, N. J.—Construction of sewer system is being considered.

Clyde, O.—City will lay 2,000 ft. of 10 and 12-in. pipe sewer.—H. M. Bacon, Village Clerk.

Elyria, O.—City will soon ask for bids for laying 1½ miles of 20-in. pipe sewer.—Martin Mueller, Director of Public Service.

Pawtucket, R. I.—Fairlawn residents are urging construction of sewers.

Sumter, S. C.—City proposes to construct outfall sewer, 22-in. pipe; cost about $8,000.

Timmonsville, S. C.—Citizens have voted $5,000 bonds for sewerage system.
—W. L. Lee, City Engineer.

Lubbock, Tex.—City will proceed with construction of proposed sewer and water works; $80,000 available.—W. M. S. Law, City Secretary.

Stoughton, Wis.—Specifications will soon be prepared for the construction of sewers in the three sewerage districts.—J. T. Hurd, City Engineer.

Winnipeg, Man., Can.—Civic Committee on Works and Property has voted to recommend construction of $610,148 worth of sewers in the following four districts: North of Polson ave., Clifton st., west of Clifton st., and Ash st.

Berlin, Ont., Can.—Citizens have voted $8,300 loan to improve sewerage system

CONTRACTS AWARDED

Pleasanton, Cal.—Construction of Pleasanton's septic sewer system, to the Schmidt Construction Co., Berkeley, $24,502; other bidders, Scott & Farley, $29,990; N. P. Gland, $25,693; Russell & Mathieson, $27,720; Federal Construction Co., $27,890; W. Heafey, $27,893; Contra Costa Construction Co., $29,072; Easterly Construction Co., $32,310; Waldie Construction Co., $33,963.—P. A. Haviland, City Engineer.

Redwood City, Cal.—Construction of storm sewer in the county road, to C. W. Melvin, $13,933.

Denver, Col.—Construction of the Washington Park storm sewer to Dennis Gibbons Constr. Co., 18 miles long, approximately $175,000.

Thompsonville, Conn.—Construction of storm sewer in Pearl st., South Pearl st. as far as the corner of Garden st. and the extension of Pearl st. to Bernardino Silvertro & Conte, of Hartford, $2,050; and for $100 additional they waived all claim for extras on account of striking rocks; other bidders were O'Neill Bros. & Nero, of Hartford, $2,830 and $2.50 per yard if they encountered rock; A. D. Ambrosia, $2,528; sewer will be 4,500 feet in length and will have 27 arms extending to the curb.

Torrington, Conn.—Sewer work in McKinley and East Center sts. and Central ave., to H. S. Driscoll & Co., $3,744.

Duluth, Minn.—To Adam McAdams, sewer at West Duluth in Fifty-ninth, Sixtieth, Sixty-first and Grand aves., $8,180.50; sewer at Forty-seventh ave. east and Superior st. to McAdams-Preston Co., $515.85; Gilbert st. sewer to J. A. Johnson, $2,835.76.

St. Paul, Minn.—To John Lind, 34 E. 2d St., for constructing sewers on 7th st., $10,300.

St. Paul, Minn.—Sewer in Van Buren pl., to Thornton Bros. at $1,537; sewer on 7th st., to John Lind, $10,300.

Miles City, Mont.—Sewers to H. C. Gass, Belleville, Ill., $59,621.20.—Burns & McDonnell, Scarritt Bldg., Kansas City, Mo., Engineers.

St. Joseph, Mo.—Sewer Construction, to Oscar Schmidt, $6,604.37.

Rochester, N. Y.—Construction of sewers in Humboldt, Hampden and Marion sts., to William H. Sours, $24,013.—Edwin H. Fisher, City Engineer.

Dayton, O.—Storm water sewer on 6th st., to Shafor & Dill, $467.20; Germantown st. storm water sewer, to Shafor & Dill, $812.50; grade and gravel Glendale ave., to Hecker & Kirschner, at $935.85; storm water sewer on Glendale ave., to Blair & Rhodes, $916.50; Clover & Hawker sts. storm water sewer, to Shafor & Dill, $1,933.70.

Lorain, O.—Constructing E. Erie ave. sanitary sewer from present outlet to city limits to H. Y. Baxter, $15.993; other bidders: T. G. Chapman, $17,477; Faragher & Randall, $20,123; The Ohio Eng. Co., $27,054.

Mansfield, O.—Franklin ave. sewer, to Lyman Ostrander, $810.50; constructing the sanitary sewer on West 4th st. and Westbrook, to George C. Long, $2,134.20; main trunk sewer in District No. 3, to Geo. C. Long, $3,981.16.

Springfield, O.—Construction of sewers as follows: Sewer in Clark st. and Lytus ave., to William Boyd, Dayton, $10,002; sewers in portions of Garfield ave., Young st., Woodlawn ave., Lincoln ave., North st., Reynold st. and 1st st., to John Arpp, Jr., $6,512; sewer in portions of 2d st., Monroe ave. and Sutphin ave., to Fred Kesting, $6,018.

Klamath Falls, Ore.—Construction of the second unit of sewer system, to Chico Construction Co., of Chico, Cal., comprising 7,792 ft. of pipe from 6 to 12-in. diameter; cost $12,490.

Janesville, Wis.—To Andrew Thomsen, Racine, for laying aggregate of 5,933.59 ft. of sewer pipe.

BIDS RECEIVED

Colton, Cal.—Construction of sewers: Watson & Spicer, Colorado Springs, Col., lowest bidders: 20,996 ft. 6-in. vit. clay pipe, 28c.; 57,999 ft. 8-in., 36c.; 5,957 ft. 10-in., 43c.; 10,140 ft. 12-in., 55c.; 5,350 ft. 14-in., 76c.; 4,723 ft. 16-in., 90c.; total, $52,306; other bidders: Balch & Radich, Los Angeles, $63,766; A. S. Bent, Los Angeles, $64,483; M. L. Hostetter, Los Angeles, $56,671; Johnson & Shea, Riverside, $63,423; C. H. Julien, San Diego, $60,207; R. N. Nikcevich, Los Angeles, $67,451.—W. L. Brown, City Engineer.

Washington, D. C.—Sewers: (a) Warren F. Brenizer & Co., (b) Howard R. Bitting, (c) E. G. Gummell, (d) George Hyman, (e) Ryan & Reilly, (f) R. J. Beall Construction Co., (g) James A. Coyle, all of Washington: Cleveland Park, sewer "A," ordinary excavation, (a) 50c., (b) 57.5c., (c) 85c., (d) 65c.; sewer brick masonry, (a) $13, (b) $14.50, (c) $16, (d) $14; 12-in. diameter sewer pipe, (a) 60c., (b) 65c., (c) 57c., (d) 55c.; 10-in. pipe, (a) 50c., (b) 54c., (c) 47c., (d) 45c. Sewer "B," ordinary excavation, (a) 90c., (b) $1.25, (c) $1.50, (d) 65c.; sewer brick masonry, (a) $13, (b) $14.50, (c) $16.80, (d) $14; 12-in. pipe, (a) 65c., (b) 68c., (c) 57c., (d) 55c. Piney Branch trunk sewers, "A," excavation, (a) 60c., (d) 25c., (e) 40c., (c) 49c.; vit. brick masonry, (a) $20, (d) $19, (e) $21.50, (c) $19.40; concrete masonry "B," (a) $7, (d) $7.60, (e) $8.76, (c) $7.16; con. masonry "C," (a) $6.75, (d) $7.25, (e) $8.08, (c) $7.24. Sewer "B," excav., (a) 55c., (d) 40c., (e) $1, (f) 50c., (c) 49c.; vit. brick masonry, (a) $20, (d) $19, (e) $22, (f) $20, (c) $19.40; concrete masonry "B," (a) $7, (d) $7.60, (e) $9, (f) $7.22, (c) $7.16; concrete masonry "C," (a) $6.75, (d) $7.25, (e) $8.50, (f) $6.97, (c) $7.24; concrete masonry "D," (a) $7, (d) $7, (e) $11, (f) $6.97, (c) $7.18. Brightwood sewer, excavation, (a) 55c., (d) 65c., (c) 75c., (b) 59c., (g) 55c.; sewer brick masonry, (a) $13, (d) $14, (c) $16, (b) $14.50, (g) $13; 24-in. diameter pipe, (a) $1.10, (d) $1, (c) $1.15, (b) 90c., (g) 90c.; 18-in. pipe, (a) 80c., (d) 80c., (c) 85c., (b) 79c., (g) 80c.; 21-in., (a) 90c., (d) 90c., (c) 95c., (b) 90c., (g) 90c.; 15-in. pipe, (a) 65c., (d) 65c., (c) 70c., (b) 67c., (g) 65c.; 12-in. pipe, (a) 60c., (d) 60c., (c) 57c., (b) 57c., (g) 60c.

Winchester, Ky.—Construction of sewerage systems: only two bids complied with the specifications, J. G. McClain & Co., Newport, $52,142.35, and E. T. Lewis & Co., Nashville, Tenn., $39,331.59; each of these firms proposed to take the bonds of $65,000 at par.

Zanesville, O.—Construction of storm sewer in Johnson st., Woodlawn ave. and Maysville ave., Geo. W. Adams, lowest bidder, $8,707; other bidders, W. S. Gregg, $10,830; T. M. Lynn, $10,987; J. F. Brown, $11,225; J. W. Hysen, $9,828; Adams Bros. Contracting Co., $9,839.

Allentown, Pa.—Construction of six storm water sewers in various sections of the city; the bids follow: Lehigh st., from Lehigh Creek to Auburn st., George H. Hardner, $5,190; Weaver Contracting Co., $5,967; Ryan & Reilly, $6,711; Summer ave., from 8th st. to 10th st., George W. Hardner, $17,541; Weaver Contracting Co., $17,779; Flanigan & Son, $23,017; Ryan & Reilly, $25,158.—Charles D. Weirbach, City Engineer.

Philadelphia, Pa.—Construction of intercepting sewer along Pennypack Creek for Holmesburg sewage disposal plant, R. P. Bennis, low bidder, $42,519.50; other bidders, Edwin H. Vare, $56,216; John McMenamy, $68,690.20; Adolph Jaffolla, $60,985.23; Lombardi & Pasouzzi, $54,090; Robert Higgins, $49,104.10; David McMahon, $47,295; Monroe Paving Co., Betz Bldg., 44,762.25.

WATER SUPPLY

Hartselle, Ala.—Citizens have voted $28,000 bonds for construction of water works and electric light plant; plans by Xavier A. Kramer, Magnolia, Miss.

Clarksville, Ark.—J. C. Wilson has secured franchise for water works, sewers and an electric light plant.

Conway, Ark.—Water Works Improvement Board has plans for water works; cost about $95,000.

Ontario, Cal.—Election in October on bonds for municipal water works to cost about $150,000 is being considered.—T. E. Trask, Los Angeles, Engineer.

Boulder, Col.—Bids will be received Sept. 19, noon, for $100,000 water works bonds.—O. P. Clark, City Clerk.

Corning, Col.—W. F. Lining, Red Bluff, is preparing plans for water and sewer system; cost $69,000.

Grand Junction, Col.—Additional appropriation of $10,000 has been made to defray expenses of securing a new supply of water.

Bartow, Fla.—City has decided to extend water mains.

Lakeland, Fla.—City will improve the water and light plant; $18,000 of bonds have been issued; will also extend the water mains, $22,000 bonds available.

New Smyrna, Fla.—Council is considering granting Fred Whitaker franchise for water works, electric light or gas plant.

Rock Mart, Ga.—Citizens have voted $25,000 bonds for construction of water works.—I. F. Mundy, Mayor.

Joliet, Ill.—Board of Local Improvements has ordered construction of water and sewer mains on North Broadway.

Joliet, Ill.—Contract will be let about Sept. 12 for construction of 2 artesian wells drilled to a depth of about 1,600 ft.—H. A. Stevens, City Engineer.

Joliet, Ill.—Plans have been completed for two new wells for additional water supply.

Urbana, Ill.—Citizens have defeated proposition to issue $150,000 bonds to purchase existing plant of water works company.

Connersville, Ind.—Citizens have voted to install new water works; well system favored.

Lamotte, Ia.—City will make improvements approximating $3,000 at water works.

Sioux City, Ia.—Plans for auxiliary pumping station for Sioux City water works plant have been adopted by Council, and Councilman G. B. Healy was authorized to procure a site and arrange for bids on construction of the proposed improvements.

Mulvane, Kan.—City will issue $30,000 bonds for municipal water supply.

Lonaconing, Md.—Lonaconing Water Co.,

will construct dam and reservoir on Koontz Run to increase water supply. A. M. Evans is interested.

Henderson, Ky.—Plans are being drawn by Superintendent William Seiber, of Henderson Water Works, for a filtering plant for city.

Lowell, Mass.—Water Board has voted to call for bids for pumping engine for Centralville pumping station.

Pittsfield, Mass.—Water Committee is considering installation of another pump at Onota Lake of 1,500,000 gal. daily capacity, and laying of about 6,700 ft. of 14-in. pipe through Linden st., Lake ave. and Onota st.; total cost of improvements, $24,000.

Pittsfield, Mass.—Water Commission is considering the installation of another pump at Onota Lake; 1,500,000-gal. daily capacity; also laying about 6,700 ft. of 14-in. pipe through Linden st., Lake ave. and Onota st.; total cost $24,000.

Harbor Springs, Mich.—George H. Fenkell, Detroit, is preparing plans for construction of new water works plant; installation includes pump, pumping station, pipe and approximately 10 miles of water mains.

Bath, N. Y.—Reuben R. Lyon is circulating petition asking for special election on extension of water mains into certain new quarters of village.

Binghamton, N. Y.—Bids will be received about Nov. 15 for construction of reservoir. Clinton L. Bogart, 57 E. 129th st., New York City, Consulting Engineer; J. D. Davidson, Secretary Board of Water Commissioners.

Ithaca, N. Y.—Bids will be received for clearing a reservoir site of about 40 acres, constructing earth embankment containing about 5,000 cu. yd., constructing a dam and furnishing and laying about 9,000 ft. of 23-in. c.-i. pipe.—D. F. McLeod, City Engineer.

Fargo, N. D.—Council has appointed commission, including Verner R. Lovell, Mayor, and Frank L. Anders, City Engineer, to investigate methods of obtaining a pure water supply for the city.

Ashland, O.—City proposes to increase water supply by raising the efficiency of the wells.—Edgar Koehl, City Clerk.

Cleveland, O.—Contract will probably be let this fall for construction of high-pressure water system; cost about $175,000.—Leslie C. Smith, Superintendent Water Works.

Niles, O.—Bonds for constructing filtration plant and extending water mains will be issued by city as soon as bids for same can be received.

South Charleston, O.—Town is considering construction of $35,000 water plant.

South Charleston, O.—Construction of water works is being considered.

Muskogee, Okla.—Citizens have organized stock company to build proposed $800,000 Grand River dam; Commercial Club is interested.

New Holland, Pa.—Residents will vote at the November election on proposition to increase debt $30,000 for water works.

Zelienople, Pa.—Borough Council has not as yet let contract for the construction of reservoirs and 8-in. rising main.—W. J. Meeder, Borough Secretary.

Timmonsville, S. C.—Citizens have voted $30,000 bonds for water works.

Willow Lakes, S. D.—City is planning to install water system.

Cross Plains, Tex.—Cross Plains Townsite Co. is considering installing system of water works.—C. H. Sharman, President.

Norfolk, Va.—Water Engineer Dornin has recommended to Board of Control that appropriation of $13 000 be secured to afford Seventh Ward water connections and incidentally to extend mains in some of streets of Sixth Ward.

Norfolk, Va.—Plans are being prepared for system of water mains on Colonial ave. and Manteo st., and on 23d, 21st and Colley sts.—W. T. Brooke, City Engineer.

La Crosse, Wis.—Citizens will vote at fall election on $250,000 bonds for water works improvements.—Geo. P. Bradish, City Engineer.

Superior, Wis.—Water and Light Department is considering establishment of new 5,000,000-gal. pump to supplement three pumps now in service.

CONTRACTS AWARDED

Carbondale, Col.—Water works, to Geddes & Co., Colorado Springs, $27,000.

East Hartford, Conn.—Furnishing 2,000 tons of c.-i. pipe and special castings to be used in Hillstown pipe extension, to Standard Cast Iron Pipe and Foundry Co., Bristol, Pa.; pipe, $23.50; castings, $49; at dock for pipe, $21.90, and castings at same point, $49.

New Castle, Del.—To William Pedrick, to dig well at Fort du Pont, $1,450; well will be 35 ft. deep, 10 ft. in diameter and 22 000 bricks and 50 barrels of cement will be used in the work.

Rushville, Ind.—To Latt-Martin Pump Co., Cincinnati, to install pumping station at water and light plant.

Louisville, Ky.—Forty-eight hydrants, to G. W. Gosnell & Co. and 42 to C. W. Adams, $136 to $152.

Ft. Missoula, Mont.—Water system, to John P. Grady, Missoula, $16,000; reinforced concrete pumping station, to P. A. Harrington, $9,100, and for machinery to Anaconda Copper Mining Co., Butte, $6,975.

Laurel, Mont.—Furnishing 10,750 ft. of 14, 8 and 6-in. machine banded wooden pipe, a steel water tower, 150 ft. high, with 75,000-gal. steel tank; a pump house; also 5,600 ft. electric transmission line, a 100-h.p. standard Motor, etc., to Gerrard & Co., Sheridan, Wyo., $27,012.

Miles City, Mont.—Settling basins, intake and filter walls, to W. D. Lovell, Minneapolis, Minn., $38,000; pipe laying, to same, $13,500; filter, to Greer Filter Co., Pittsburg, Pa., $9,200; tower and tank, to Chicago B. & I., Chicago, Ill., $13,947; hydrants and valves, to Ludlow, Kansas City, Mo., $3,241; c.-i. pipe, to American C. I. Pipe Co., $36,735.44; pump, to Platt Iron Works, Dayton, O., $7,500.—Burns & McDonnell, Scarritt Bldg., Kansas City, Mo., Engineers.

Perth Amboy, N. J.—Erecting 125-ft. radial brick chimney at Runyon, to Alphons Custodis Chimney Co., $2,260.

Canajoharie, N. Y.—Construction of municipal water system: Furnishing wood stave pipe consisting of 10 miles of 8, 10 and 12-in. pipe and three tons of c.-i. specials, to A. Wyckoff Son Co.; 356 tons of c.-i. pipe and 5 tons c.-i. specials, to Chas. Millar & Sons Co., Utica, $8 535.70; laying 10 miles of 8, 10 and 12-in. wooden stave pipe, distribution reservoir; laying 1½ miles of 12-in. c.-i. pipe and necessary appurtenances, to Weller, Boughton & Co., Troy, $49,860.

Lockport, N. Y.—Construction of drain and water pipe on Allen st., to Frank J. Le Valley, Sr., $1,280; other bidders were Stainthorpe & Co. at $1,490, and C. B. Whitmore Co. at $2,200.

Schenectady, N. Y.—Relaying of 1,500 ft. of 8-in. water mains in Maxon road to Beckwith Bros., 42c. per lin. ft; only other bidder, J. Clements, 43c.

Barnesville, O.—Furnishing material and laying 6,550 ft. 8, 6 and 4-in. pipe and placing eight hydrants, to U. S. Pipe & Fdy. Co., for all pipe and specials; R. D. Wood & Co., hydrants and valve boxes; Rensselaer Mfg. Co., for valves, and to W. H. Patterson & Son, Barnesville, for laying pipe, etc.

Francis, Okla.—To C. A. Rees, Tablequah, to construct water works.

Eugene, Ore.—Constructing building city will use for filter plant, Architect John Hunzicker, to W. O. Heckart, lowest bidder.

Dallas, Tex.—To Ingersoll-Rand Co., New York, for two air compressiors to be used on four Paluxy wells, $5,099 and $6,208, respectively.

BIDS RECEIVED

East Hartford, Conn.—Furnishing 2,000 tons of c.-i. pipe and special castings to be used in the Hillstown pipe line extension, Donaldson Iron Co., Evans, Pa., straight pipe, f.o.b. Burnside, and at that point for castings, $50; Charles Miller & Sons, Utica, N. Y., $22.70; castings, $50; Warren Foundry and Machine Co., York, $24, and special castings $48; at Naubuc dock, for pipe, $23, and at the same point for castings, $48; United States Cast Iron Pipe Co., Philadelphia, per ton of 2,000 lbs. $22.60, for castings and branches, $50, and at Naubuc dock $21, the Commission to pay wharfage, and at that point for castings, $50; Standard Cast Iron Pipe and Foundry Co., Bristol, Pa., awarded contract, pipe $22.50, and for castings, $49; at the dock $21.90, and castings at that point, $49; Florence Iron Works, Philadelphia, $22.90, castings $49.25; at the dock for the pipe, $21.80, and for castings at the dock $48.25.

Boston, Mass.—Furnishing, delivering and erecting two steam turbine centrifugal pumps for city pumping station at Calf Pasture, lowest bidder Power Equipment Co., $36,063; other bidders were the Terry Steam Turbine Co., $41,980, and the General Electric Co., $46,394.

Canajoharie, N. Y.—Construction of municipal water system, wood stave pipe, consisting of 10 miles of 8, 10 and 12-in. pipe and three tons of c.-i. specials: Michigan Pipe Co., Bay City, Mich., $40,977.54; A. Wyckoff Son Co., Elmira, $38,607.65; 356 tons of c.-i. pipe and five tons of c.-i. specials, Charles Millar & Son Co., Utica, $8,535.70; United States Cast Iron Pipe Co., New York City, $8,597.96; Donaldson Iron Co., Emans, Pa., $8,911.28; R. O. Wood, Philadelphia, Pa., $8,964.59; laying 10 miles of 8, 10 and 12-in. wood stave pipe, distribution reservoir; laying 1½ miles of 12-in. c.-i. pipe and the necessary appurtenances to work, W. G. Gooddle, Schenectady, $50,896.48; B. G. Coon Construction Co., Wilkes-Barre, Pa., $58,321.59; John C. Tierney, New Jersey, $70,248.27; Thomas Boze & Co., Rome, $70,507.53; Weller Boughton & Co., Troy, $49,860.

Grand Rapids, Mich.—Installation of two turbo-generators, two surface condensers and two exciter sets, Allis-Chalmers Co. of Milwaukee, lowest bidder, $28,220; Secretary Freshney's estimate, $28,990.

Barron, Wis.—Steel tower, 90-ft., and a wooden tank of 35,000-gal. capacity: U. S. Wind Engine and Pump Co., Batavia, Ill., $2,950; W. D. Lovell, Minneapolis, Minn., $3,295; Chicago Bridge and Iron Works, Chicago, Ill., $3,320.

LIGHTING AND POWER

Warren, Ark.—Plant of Arkansas Lumber Co., which furnished light and water for city, will be rebuilt at once.

Greenville, Cal.—Indian Valley Electric Light and Power Co. is considering extension of its service to Crescent Mills and Taylorsville.

Oakland, Cal.—City Engineer Turner is of the opinion that city should construct and control underground conduit system.

Pomona, Cal.—J. M. Paige, Superintendent of Parks, has been instructed to make investigations in regard to cost of installing lighting system in Ganesha Park.

Rehoboth, Del.—Contract for town street lighting expires on Sept. 14 and the electric light people have submitted bid for contract to light town; gas company also have proposition before Board of Town Commissioners.

Lakeland, Fla.—City is completing arrangements for improvement of electric light plant.

Athens, Ga.—Citizens are agitating great white way.

Kankakee, Ill.—Kankakee Gas and Electric Co. has been incorporated to operate light, heat and power plant; capital $10,000.—Harry B. Hurd, C. W. Hambling and P. A. Neuffer, Incorporators.

Okawville, Ill.—Okawville Electric Light and Ice Co. has been incorporated with a capital of $10,000, to maintain and operate electric light plant.—John Feitsam, John J. Frank and William F. Hagebusch, Incorporators.

Michigan City, Ind.—Movement is on foot to inaugurate goose-neck system of street lighting in this city.

Malvern, Ia.—Town has voted to grant electric light company exclusive 10-year franchise.

Barboursville, Ky.—Towns of Harlan and Manchester will soon have electric lighting plants; citizens of Harlan have formed a stock company for putting in system; water works system is also a probability; at Manchester local stock company has begun installation of electric lighting plant.

Haverhill, Mass.—Haverhill Gas Co. proposes to erect larger holder, having storage capacity of 1,000,000 cu. ft., and also generating house, which will be equipped with entirely new apparatus; proposed extensions will cost over $250,000.

New Bedford, Mass.—State Board of Gas and Electric Light Commissioners has approved application of New Bedford Gas and Edison Light Co. for an increase in capital stock of $215,000, for additions to the plant and to take up floating indebtedness.

Westfield, Mass.—City is considering plans for extensions and improvements to municipal electric and gas plants, including the erection of a new building and the installation of new machinery.

Rochester, Minn.—Plans have been prepared by E. D. Jackson, Engineer, St. Paul, for installing electric light wires underground and installing new lighting system; estmated cost $2,000 a block.

La Grange, Mo.—City will construct incandescent street lighting system.

Stevensville, Mont.—Edgar S. Dorman, of Missoula, has completed survey for power plant on Rock Creek.

Blue Hill, Neb.—Citizens have voted $8,000 bonds for lighting purposes.

Perth Amboy, N. J.—Public Service Corporation has plans well under way for improvements to be made at Buckingham ave. and Hartford st.; plans for main portion of this, consisting of power house, have been drawn and approved; about $500 000 will be expended.

Rutherford, N. J.—If Public Service Gas and Electric Corporation does not give borough better service Mayor and Council announced they will advertise for bids for private parties to furnish the gas, and should there be none to take steps in way of erecting plant of their own.

Columbus, O.—Councilmen Sherman, Harper and Ross, committee appointed to ascertain cost of equipping municipal electric light plant for commercial lighting and power, has decided to ask Herman Gamper, Superintendent of city light plant, for data concerning the cost of necessary equipment; committee is considering reporting back ordinance to increase plant's capacity and to submit to vote question of issuing bonds to defray cost; $300,000 will be required.

Pryor Creek, Okla.—E. T. Archer, 426 Beals Bldg., Kansas City, Mo., is preparing plans for electric light system and 10-ton ice plant.

Sapulpa, Okla.—H. M. Byllesby & Co., Chicago, Ill., are considering expending $100,000 in improvements and extensions to plant of Sapulpa Electric Co.—Harry B. Wales, Grand Rapids, Mich., Manager.

Talihina, Okla.—Arthur L. Mullergren, Poteau, has completed plans for electric light plant consisting of 35-kw. single-phase generator, belted to a 50-h.p. speed engine.

Redmond, Ore.—The Odin Falls Power Co. is considering construction of power plant at Olin Falls to transmit electricity and pipe water to this town.

Jenkintown, Pa.—Jenkintown Electric Light Co. is preparing to extend its service to Southampton.

Cross Plains, Tex.—Cross Plains Townsite Co. is considering construction of electric light plant.—C. H. Sharman, President.

Milwaukee, Wis.—Milwaukee Electric Railway and Light Co. will erect $80,000 addition to Commerce st. power plant and $25,000 substation at Clinton and Maple sts.

Milwaukee, Wis.—Council has ordered Committee on Street Lights to investigate feasibility of installing gasoline street lighting system.

CONTRACTS AWARDED

Los Altos, Cal.—To J. D. Farwell, manager of the Los Gatos Ice, Gas and Electric Co., to install electric light and power plant.

Richmond, Ind.—Franchise to furnish light and power has been awarded to Robert S. Ashe, city, by College Corner Town Board; electricity will be conducted on line which runs south through Wayne and Union counties from this city.

Baltimore, Md.—Installation of electrical apparatus at Bayview, to Kingsley-Samuels Co., $23 722.

Miles City, Mont.—Power house, to Chas. Stockhill, city, $6,895; generators, to General Electric Co., $3,797.70; switchboard, to same, $2,964.30; armatures to same, $1,548.40; poles, to Corney & Co., $597.50; pole line material, $1,506; engine, to Whiteacre & Co., St. Paul, Minn., $3,690. Burns & McDonnell, Scarritt Bldg., Kansas City, Mo., Engineers.

BIDS RECEIVED

Sandusky, O.—Sandusky Gas and Electric Co. is only bidder for the local street lighting franchise which it now holds, and which expires Jan. 1, 1912.

FIRE EQUIPMENT

Phœnix, Ariz.—Residents of Five Points are urging Council to provide them with combined electric hose and chemical wagon.

Redding, Cal.—Combination auto chemical and hose wagon will be purchased.

Warehouse Point, Conn.—Volunteer fire company will be formed.

Boise, Ida.—City is considering purchase of two combination engines and 2,000 ft. of hose.

Quincy, Ill.—Fire Chief Schlag has recommended erection of fire station.

Eldridge, Ia.—Architect C. R. Spink, Davenport, has prepared plans for erection of hose house.

Boston, Mass.—Mayor Fitzgerald will send to next meeting of Council a loan order to appropriate $172,000, of which $105,000 will be expended in replacing fire apparatus burned at the Albany st. fire and $67,000 to be expended for reconstruction of repair shop of the fire department, also destroyed at the same fire.

International Falls, Minn.—City will purchase 800 ft. of hose.

Minneapolis, Minn.—Fire Chief Canterbury has asked for $10,000 for hose and pipe and $5,000 for fire alarm system.

Manchester, N. H.—Finance Committee has reported favorably on $6,000 appropriation to purchase 2,000 ft. of hose.

Elizabeth, N. J.—Fire Chief August Gerstung is favorable to installation of auto fire engine.

Pitman, N. J.—Plans have been completed for enlargement of house of Pitman Fire Co. No. 1.

Niagara Falls, N. Y.—Council has received recommendation from Fire Commissioners asking for two new fire engines.

Bismarck, N. D.—Citizens have voted $15,000 for erection of fire station.

Follansbee, O.—Purchase of 1,000 ft. of hose is being urged.

Coshocton, Pa.—Fire Committee will purchase 1,000 ft. of 4-ply hose.

Hazleton, Pa.—Specifications have been adopted for purchase of 1,000 ft. of hose.

Norristown, Pa.—The Hancock and Bridgeport Fire Companies may soon have auto fire engines.

Logan City, Utah.—Purchase of chemical and hose wagon is being considered.

Clarkston, Wash.—Council has authorized purchase of 1,000 ft. of fire hose, and the matter of purchasing additional hose carts will be taken up at next meeting.

Tacoma, Wash.—Fire Chief Geo. McAlevy has recommended following appropriations: $4,456.20 for new material for fire alarms and $19,596 for engine house at North 25th and Proctor sts.; among the improvements for 1911, $75,000 is asked to serve as a second appropriation for fire tug and $5,000 for fire tug headquarters; other proposed improvements are as follows: New house for Engine Co. No. 4, $30,000; three lots for engine house No. 4, $15,000; one new motor-driven truck with 75-ft. extension, $7,000; one new motor-driven combination hose wagon for No. 3, $6,000; one auto runabout for Assistant Chief, $3,000; six horses, $1,800; 5,000 ft. of fire hose, $4,500.

Moundsville, W. Va.—Plans have been submitted by Herman Haas for erection of hose house at 6th st. and Morton ave.

Fond Du Lac, Wis.—Residents of East Division and adjacent streets are urging better fire protection.

Hulett, Wyo.—Newly organized department will purchase apparatus.—Carl Carman, Chief.

Montreal, Que., Can.—Gasoline automobile fire engines, which can travel at a speed of 60 miles an hour and use same power for driving their pumps as for their wheels are the latest additions planned by Chief Tremblay for fire brigade.

BIDS RECEIVED

Harrisburg, Pa.—Remodeling Hope engine house, G. W. Shook, $5,287.85; Stapf & Benfer, $5,549; George H. Sechrist, $6,432; J. K. Isenberg, $6,893; Good Will remodeling, J. K. Isenberg, $3,229, and W. H. Opperman, $3,290.

Scranton, Pa.—Three fire houses: Second Ward, West Market st., F. L. Brown, Architect, S. Sykes & Sons, $9,746; M. J. Ruddy, $9,847; A. A. Kearney, $9,700; Woelkers & Bielman, $9,800; Twenty-first Ward, Cameron ave., F. L. Brown Architect, Allspaugh Bros., $9,300; M. A. Cadden, $8,300; Seventeenth Ward, corner Taylor and Olive, Blackwood & Nelson, Architects., S. Sykes & Sons, $9,900; L. T. Stipp, $9,531.07; F. V. Leitner, $9,075; Woelkers & Bielman, $9,160; Peck Lumber Co., $9,475.

BRIDGES

Marianna, Ark.—Lee County has decided to expend $100,000 for bridges and roads.

Long Beach, Cal.—First complete plans, drawings and specifications for a horseshoe pier have been completed by Architect H. W. Metcalf and L. A. Waterbury, who is in charge of the engineering department of the University of Arizona.

Sonora, Cal.—J. N. Pickle, County Surveyor, has been authorized to prepare plans and estimates for construction of a bridge across Curtis Creek.

Pueblo, Col.—Council is considering plans for erection of bridge over Arkansas River at Union ave.

Wilmington, Del.—Kent County and New Castle County Levy Courts will confer Sept. 13 about plans for bridge at Pratt Mill, Clayton.

Cairo, Ill.—Alexander County is considering erection of several bridges.—J. E. Miller, County Clerk.

Mendota, Ill.—Bids have been rejected for construction of three bridges, one at Jefferson st., one at 5th ave. and the other at 9th ave.; work will be readvertised.

Crown Point, Ind.—Indiana Trust Co., Indianapolis, was successful bidder for $75,000 Lake County bridge bonds.

Clinton, Ia.—Plans have been prepared for construction of concrete bridge on Main and High sts.

Visalia, Ky.—Kenton and Campbell counties are considering construction of bridge over Licking River, connecting Kenton and Campbell counties; cost about $26,000.

Kalamazoo, Mich.—Contract will be let this fall for construction of 2 or 3-span reinforced concrete arch on Gull and Mill sts., to be 200 ft. long with 24-ft. roadway. —H. A. Johnston, Engineer.

Hibbing, Minn.—Village Council is considering building of bridge at West st.; cost about $11,000.

Mankato, Minn.—Plans will be prepared for wagon bridge across LeSueur River at Red Jacket Ford; cost about $10,000.

Missoula, Mont.—Council has decided to ask for bids for constructing bridge across the Rattlesnake at Vine st.

Cape Girardeau, Mo.—Council, in conjunction with County Court, will soon receive bids for construction of concrete viaduct; cost $3,000.—C. W. McCrea, City Engineer.

Schenectady, N. Y.—Council is considering plan for concrete bridge over Cotton Factory Hollow; plan presented by E. A. Carter, Providence, R. I.

Doylestown, Pa.—County Commissioners have decided to build concrete bridge over Pine Run Creek.

Pittsburg, Pa.—Building of a viaduct at Cayuga st., connecting Friendship and Grant blvds., is being considered.

Reading, Pa.—The County Commissioners have decided to construct concrete bridge across Schuylkill River at Penn st.; cost $100,000 to $150,000.

Cuero, Tex.—Counties of Dewitt and Goliad contemplate constructing bridge across Fifteen-Mile Creek; cost $15,000.

Seattle, Wash.—Plans are being prepared for bridge across Lake Union on Stone ave.; cost about $30,000.

Tacoma, Wash.—Council is having estimates prepared for construction of viaduct connecting Puyallup River bridge with city waterway bridge.—W. C. Raleigh, City Engineer.

Superior, Wis.—Building of a bridge across Nemadji River on W. 4th st. is being considered.

Winnipeg, Man., Can.—City Engineer Ruttan has estimated cost of a new bridge and of a subway at Salter st., as follows: Bridge, 26 ft. wide for two street car tracks, with 2-ft. 5-in. sidewalks, $283,350; 34 ft. wide, $368,909; 42 ft. wide, $451,359; subway, same accommodation for traffic as the 26-ft. bridge, $525,000.

CONTRACTS AWARDED

Rushville, Ind.—Constructing a 55-ft. concrete arch bridge in Washington Township, to the Fan-American Bridge Co., New Castle.

Shelbyville, Ind.—Culvert and bridge work; largest structure to be built across Fox ford, in Marion Township, to National Concrete Co. and A. W. Moore; aggregate bid $9,515.49.

Warsaw, Ind.—Bridge abutments, Coer & Co., Etna Green, Deemer structure: Summy & Co., Palmer, Bowser, Metzger, Rogers and McGinley structures; Doty Bros., Dick and Leckrone structures; superstructures: Van Skkhawk & Kitch, Bowser, Palmer, McGinley and Leckrone structures; Elkhart Bridge and Iron Co., Rogers, Dick and Metzger structures; no contract was awarded for Deemer structure, only bid being much higher than appropriation.

Chester, Mass.—Constructing concrete bridge with 110 ft. span over Westfield River, to Coleman Bros., Boston, $19,042.

Randolph, Minn.—Construction of bridge across Cannon River, to Hennepin Bridge Co., Minneapolis, $7,700.—L. P. Wolf, 204 Essex Bldg., St. Paul, Engineer.

Louisiana, Mo.—Construction of a bridge across Peno Creek, to the Missouri Bridge Co., $3,725.

Cuero, Tex.—Coletto bridge between Cuero and Goliad, to M. S. Hasle, Jr., Dallas, $5,798.

Brodhead, Wis.—Constructing bridge across Sugar River, to Wm. H. Shons, Freeport, Ill., $4,800.

Genoa Junction, Wis.—To Wm. H. Shons, Freeport, Ill., to construct bridge, $4,000.

BIDS RECEIVED

Boston, Mass.—Repairing Broadway bridge, William H. Ellis, $10,930.50; Lawler Bros. $10.212; George T. Rendall, $9,972.

Springfield, O.—W. H. Sieverling, lowest bidder, $22,392, for constructing the E. High st. bridge over Big Four R. R. tracks.

MISCELLANEOUS

Piggott, Ark.—City is considering erection of jail.

Chico, Cal.—City has awarded $150,000 municipal improvement bonds to E. G. Rollins & Sons, San Francisco.

Winsted, Conn.—Town has appropriated $14,000 for town hall.

Wilmington, Del.—Chief of Police George Block has recommended that department be equipped with automobile service.

Wilmington, Del.—Chief of Police George Black has recommended to Police Commissioners that they purchase automobile for accommodation of department.

Washington, D. C.—Maj. Sylvester has asked Capt. Markham, Assistant Engineer Commissioner, to get estimates on cost of tearing out cells in police stations Nos. 1, 4, 6 and 8, and also to furnish figures on placing steel cages therein.

Atlanta, Ga.—Park Commission has adopted resolution to start work at once on public comfort building at Piedmont Park, and to use $4,000 appropriated as far as it will go.

Fort Wayne, Ind.—Bids will be received by Board of Safety for motor patrol wagon; Council has appropriated $2,000 for this purpose.

Muncie, Ind.—Park Commissioners are considering improvements at McCulloch Park.

Louisville, Ky.—Boards of Safety and Public Works have allowed $16,000 appropriation for erecting street intersection signs.

Louisville, Ky.—Board of Works will be allowed $2,000 to be used in beautifying and equipping Tyler Park.

Owensboro, Ky.—Order has been made in County Court for the straightening of Horse Fork creek; cost about $6,000.

Baltimore, Md.—Walters Free Bath Commission, Room 15, City Hall, will erect $30,000 bath at 31 East West st.

Springfield, Mass.—Fire headquarters, to A. E. Stephens Co., New York, $83,105; police building, to same, $84,262.

Duluth, Minn.—Council has ordered Health Commissioner to readvertise for bids for incinerator smoke stack.

Minneapolis, Minn.—New park bathhouse will be built on north shore of Lake Calhoun.

St. Paul, Minn.—Mayor Keller has vetoed resolution of Alderman Ries appropriating $300 to be used by Commissioner of Public Health for preparing plans and specifications for incinerating and rendering plant.

Newark, N. J.—President Denman, of Board of Works, and Chief Engineer Sherrerd are urging issuance of $200,000 bonds to make possible purchase of land in the watershed and to carry on work of meadow reclamation and ship canal project.

Corning, N. Y.—City has signed contract made by Edw. Deegan with city for disposing of city's garbage for five years; he will place an order for 500 cans and wagons at once.

Dayton, O.—Chief Engineer Lou Weaver, of the city works pumping station, is urging construction of a more substantial residence for Chief Engineer at pumping station.

East Pittsburg, Pa.—Council is considering purchase of street sprinkler and sweeper.—D. E. Hunnihan, President.

Harrisburg, Pa.—Bids will be received probably about Sept. 15 for $91.000 municipal bonds which will be sold this year so that work can be started on some of the improvements for which people voted in the spring.

Philadelphia, Pa.—City is considering erection of three-story building for Electrical Bureau.

Rochester, Pa.—Bids will at once be asked for erection of $10,500 municipal building; plans by Architect Mathews.

El Paso, Tex.—Plans are to be drawn at once by Trost & Trost for proposed monument which is to be erected in City Hall Park in memory of Mayor W. F. Robinson and Fireman F. T. Ware, who lost their lives in Calisher fire.

Milwaukee, Wis.—Public comfort stations in City Hall and Public Library and Museum building have been suggested by Building Inspector Koch; Council has made provision for stations in Juneau Park, at Grand ave. bridge, and at 6th st. viaduct.

CONTRACTS AWARDED

Erie, Pa.—Furnishing lubricants to be used on machinery at pumping station during coming year, to George T. Clarkson, Emlenton, 8½c. for every 1,000,000 gallons of water pumped.

Fort Worth, Tex.—Two two-story brick buildings at County Poor Farm, to R. H. Thompson, local contractor, $18,909.

Lockhart, Tex.—To Swearingen & Ingraham contract to build new city hall, $8,325.

Norfolk, Va.—Kindling Machinery Co., Milwaukee, Wis., for squeegee, street cleaning device, $1,290.

Racine, Wis.—Combination ambulance and patrol wagon, to Studebaker Co., through Miller Motor Co., $3,950.

BIDS RECEIVED

Oakland, Cal.—Supplying automobile for Police Department: Studebaker Co., $3,500; Consolidated Motor Car Co., $3,500; Pioneer Automobile Co., two bids, $2,900 and $3,180; F. R. Fageol, $2,836.50; H. W. Bogan, $2,500; Western Electric Vehicle Co., $2,950.

Oakland, Cal.—Construction of the McElroy Memorial fountain in Lakeside Park, J. L. Delano, granite, $13,895; Rickon-Ehrhart Construction Co., Rocklin granite, $12,000, Columbia marble, $13,100; A. T. Hunt Co., granite $12,000, Italian marble $14,350; Colusa Sandstone Co., Georgia marble $10,612, sandstone $6,200; Raymond Granite Co., granite, $13,479; California Granite Co., granite, $11,100.

Boston, Mass.—Construction of section 2 of Beacon Hill tunnel for the Cambridge subway construction: Coleman Bros., $281,450; Patrick McGovern, $289,925; Hugh Nawn Construction Co., $296,660; Luke Mullen, $327,850; Jones & Meehan, $332,335; Charles R. Gow & Co., $343,310; Coughlin & Shields Co., $347,925; John E. Palmer, $359,400; John J. Falvey & Co., $435,850; Metropolitan Construction Co., $451,350; Coleman and McGovern bids taken under consideration.

Buffalo, N. Y.—Constructing city's tuberculosis hospital, Mosier & Summers, $138,300, not including heating, plumbing or electrical work, these items being separately bid on; next lowest bidder, Morris & Allen, general construction work, $168,950; other bidders for this work were George Schaaf, $177,325; John Lannen, $174,921; C. H. Everitt, $169,461; Noblett & Hartmann, $180,600; Eastern Concrete Steel Co., $184,285, and Robert E. Williams, $179,000; lowest bidder for electrical work, McCarthy Bros. & Ford, $3,185, other bidders being the Buffalo Electrical Contracting Co., $3,500; Buffalo Electric Co., $3 450, and F. P. Little Electric Co., $3,590; only bidder for plumbing was George H. Drake, $5,954; lowest bidder on the heating, John W. Danforth Co., $10,976; other bidders, M. F. Tallmage, $12,236, and George H. Drake, $11,525; Trustees have $20,000 for building and equipping hospital.

TOO LATE FOR CLASSIFICATION

STREET IMPROVEMENTS

Jonesboro, Ark.—Citizens of Huntington ave. have organized for improvements decided upon for thoroughfare, and will soon have a graded and paved street and concrete sidewalks.—Joe Mason, Chairman.

St. Petersburg, Fla.—Citizens have voted $67.500 for vitrified brick pavements.

Taylorville, Ill.—Bids will be received Sept. 14, 2 P. M., for 15,632 sq. yds. vitrified block pavement on 6-in. concrete base, sand cushions and asphaltic filler; including also 5,078 cu. yds. excavation, 189 cu. yds. fill, and 12, 586 lin. ft. combined curb and gutter.—J. K. Bumgardner, City Clerk; J. W. Dappert, City Engineer.

Evansville, Ind.—Board of Public Works has ordered concrete sidewalks on Kentucky ave.

Duluth, Minn.—Conference Committee will make levy for purchase of modern rock crusher.

Missoula, Mont.—Mayor Logan, Aldermen McCormick and Crawford and City Engineer Buck will visit Coeur d'Alene City via Spokane, to investigate construction of Hassam pavement.

Elizabeth, N. J.—Council is considering paving of Bond st. with trap rock and Rankin st. with brick.

Woodstown, N. J.—Salem County Board of Freeholders having refused to raise bridge and fix road in Woodstown, Borough Council has decided to proceed with work.

Portland, Ore.—Plans for widening Washington st., distance of over a mile, will be prepared by City Engineer.

Arnprior, Ont., Can.—Road Commissioner D. Carmichael has asked for tenders for the building of road.

North Bay, Ont., Can.—Township of Widdifield has passed by-law to raise $33,000 for purpose of opening, improving, grading and graveling streets, also for construction of water works.

Regina, Sask., Can.—By-law has been passed to provide $132 000 for pavements, and $28,000 for sidewalks.

CONTRACTS AWARDED

Florence, Ala.—Street improvements, to J. H. Angel, city.

Newark, Del.—Horigan Construction Co., to build macadam road from State line near Fair Hill to Newark, $14,593.

Shawsville, Del.—By Hartford County Commissioners, to Deckman & Forsythe for improving of the road from Shawsville to creamery, $4,000.

Chicago, Ill.—Cement sidewalks, fourteen contracts, 5 ft. to 14 ft., to Albert Graff; five contracts, 6 ft. to 20 ft., to General Cement Construction Co.; three contracts, 6 ft., to Thos. D. Joy & Co.

Newport, Ind.—Construction of the J. T. Higgins gravel road in Eugene Township, to Harry A. Carpenter, Clay County, $9,321, and Coon Hollow road, in Clinton Township, to George and Charles Sykes, $5 300.

Holly Springs, Miss.—To F. F. Conover, Grenada, for laying all concrete sidewalks.

Rochester, N. Y.—Brick pavement in Arnett st., to Hagaman, Miller & Hagaman, $52.012; brick pavement in Genesee st., to Whitmore, Rauber & Vicinus, $21 541; constructing an asphalt pavement at Convention Hall, to Rochester Vulcanite Asphalt Paving Co., $2,216.

Reading, O.—To Michael Ross to improve Bonnell ave. with macadam and a cement curb and gutter, and to August Smith to make cement curbs and gutters in Pearl, Harms and Reading sts.

Portland, Ore.—Laying asphalt pavement on 6th st., to Barber Asphalt Paving Co., $88,160; next largest contract was for placing bitulithic pavement on Prescott st., $84,433; Oregon Hassam Paving Co. received contracts for paving Hood, Macadam and other streets in South Portland, $51,383; Alberta st., $50,993, and Derby st., $33,167.

Spokane, Wash.—To Naylor & Norlin, lowest of two bidders, grading and sidewalking Seventh ave., $11 383; estimate, $9 800; to Mitchell Bros., lowest of three bidders, grading and sidewalking of Post st; estimate, $12,600.

SEWERAGE

St. Petersburg, Fla.—Citizens have voted $5,000 for sewer construction.

Joliet, Ill.—Board of Local Improvements has ordered construction of sewer and water mains in North Broadway.

Elizabeth, N. J.—Council is considering construction of sewers on Trenton and three other avenues.

Utica, N. Y.—Board of Contract and Supply has approved plans for sewer in Varick st.

Massillon, O.—Sewers in Front st. and South Lincoln ave. will be built next spring.

Vernon, Tex.—Citizens have voted sewer bonds.

Spokane, Wash.—To G. Burgie, sewer on Hamilton st. for $5,500; estimate, $5 690; sewer on Sixteenth ave., for $2,100; estimate, $2,136.

Milwaukee, Wis.—Sewage disposal plant for city in town of Lake is being considered.

Berlin, Ont., Can.—By-law has been passed to spend $8,300 in improving the sewerage system.

Hull, Que., Can.—Residents of Wrightville have petitioned Council for sewerage system and for installation of larger water mains.

Vancouver, B. C., Can.—City Engineer Clement has prepared estimate for a trunk sewer on Glen Drive.

CONTRACTS AWARDED

Searcy, Ark.—Building sewers to Pouncey Paving and Construction Co.

Louisville, Ky.—Furnishing sewer pipe in all sizes from 4 to 36-in., to P. Bannon Sewer Pipe Co.; city uses about $20,000 worth of sewer pipe a year; to Louisville Brick Co. for furnishing hard brick for sewers and repair work, $7.50 a thousand delivered at the work; Charles Stiglitz & Sons, lowest bidders on sewer caps and castings.

Massillon, O.—Sewer work in Third st., to Frank Kraft; work in Thorne and Water sts. to Valentine Neidlinger.

Portland, Ore.—To Jacobsen-Bade Co., for installing a system of sewers in Council Crest Park, $26,352; Tillamook st. sewer system, to Carter Bros., $19,608.

Oshkosh, Wis.—To J. Rasmussen & Sons Co., constr. sewer on Minnesota st.; laying of 15-in. sewer, 95c. per lin. ft.; slants, $1 each; manholes flush with surface, $30; manholes 2 ft. below surface, $36; catch basins, $35; excavation of rock, $4 a cu. yd.; excavation of solid rock, $5.50 a cu. yd.

WATER SUPPLY

St. Petersburg, Fla.—Citizens have voted $10,000 for water works improvements.

Trenton, N. J.—Bids will be received Sept. 15, noon, for $100,000 water bonds.—H. E. Evans, City Treasurer.

Bloomingdale, N. Y.—Citizens have voted $15,000 water system; as soon as plans embracing a complete system of underground mains, hydrants, etc. are complete, bids will be asked for and contract let to lowest bidder.

Urbana, O.—City will install water works system.

Vernon, Tex.—Citizens have voted water works bonds.

Spokane, Wash.—Water Department desires following appropriations: Unit at upriver pumping station, recommended by Board of Public Works and concurred by Council, $13,500; further developments of underground water supply, $10,000; pumping station at Lincoln Heights reservoir, $8,000; connecting main on Ray st. to Twenty-ninth ave. standpipe, $23,700.

Chippawa, Ont., Can.—By-law to provide for a water works system will be submitted to ratepayers shortly.

CONTRACT AWARDED

Searcy, Ark.—Building water system to P. C. Brooks Sons, Kansas City.

BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREET IMPROVEMENTS				
Kansas	Hutchinson	Sept. 9, 3 p.m.	Building three blocks of curbing on Second ave.	Ed. Metz, City Clerk.
Illinois	Sterling	Sept. 10, 7.30 p.m.	Paving Wallace st. and 2 alleys; $1,000 and $5,000 checks	A. R. Hendricks, Pres. Bd. Loc. Imp.
Ohio	Mt. Vernon	Sept. 10, noon.	Repairing E. High st., from Public Square to Gay st.	C. M. Fairchild, Dir. Pub. Service.
Nebraska	Omaha	Sept. 10, noon.	Grading 2,500 cu. yds., also 3,000 cu. yds. for County	D. M. Haverly, County Clerk.
Idaho	Albion	Sept. 12, 2 p.m.	Bldg. wagon road ½ mile long, also road 2,300 ft. long	Bd. Comrs. of Sassia County.
Indiana	Gary	Sept. 12	Constructing sidewalks on sundry streets.	A. P. Melton, City Engr.
Indiana	Indianapolis	Sept. 12, 10 a.m.	Improving various streets; 3 contracts	C. A. Schrader, Pres. Bd. Pub. Wks
New York	Albany	Sept. 12, 1 p.m.	Bldg. highways in Cattaraugus County	S. P. Hooker, Chm. St. Hwy. Com.
Illinois	Morrison	Sept. 13, 2 p.m.	Brick paving, 12,270 sq. yds., on crushed limestone base; 6x24-in. gravel conc. curb, 3,581 ft.; sandstone curb, 625 ft.; excav., 3,300 cu. yds., adjusting manholes, etc.	F. A. Van Osdol, Pres. Bd. Loc. Imp.
New York	Binghamton	Sept. 14	Resurfacing and oiling Court st., from Alice st. to State Hosp.	DeWitt C. Herrick, City Clerk.
Ohio	Cincinnati	Sept. 14, noon.	Wood block paving, comb. curb and gutter, grading, Ludlow ave.	John J. Wenner, Clk. D. Pub. Serv.
Oklahoma	Cherokee	Sept. 14, 5 p.m.	Bldg. cement street crossings	J. W. Rackley, City Clerk.
Pennsylvania	Harrisburg	Sept. 14, 2 p.m.	Paving with brick or other suitable material, 65,600 ft., 12 ft. road, also 2,963 lin. ft., inc. 11, 250 and 5,950 ft. conc. curb	Jos. W. Hunter, State Hwy. Comr.
Pennsylvania	Harrisburg	Sept. 15, 2 p.m.	Brick or other paving, 17,260 sq. yds., 23,050 sq. yds. bituminous macadam, 25,900 lin. ft. concrete curbing, Armstrong Co.	Jas. W. Hunter, State Hwy. Comr.
Washington	Seattle	Sept. 16, 10 a.m.	Grading and regrading various streets	C. B. Bagley, Sec'y. Bd. Pub. Wks.
Ohio	New Boston	Sept. 16, noon.	Laying concrete sidewalks on 3 aves., and Grace st.	Roy Coburn, Chm. St. Com.
Missouri	Kirkwood	Sept. 17	Improving Dickson st., from Main st. to St. L. & K R. R. tracks	Thomas B. Smith, City Clerk.
Illinois	Cairo	Sept. 17, 10 a.m.	Brick paving, 59,975 sq. yds., Commercial ave., $135,410.	W. B. Thistlewood, City Engineer.
Pennsylvania	Harrisburg	Sept. 19, noon.	Paving 107,518 sq. yds., curbing, 100,587 ft., 58 jobs, $312,986	W. W. Caldwell, Highway Comr.
Oklahoma	Oklahoma City	Sept. 19, 5 p.m.	Asphalt paving 302,670 sq. yds., 23 sections, cost $984,937	W. C. Burke, City Engineer.
Alabama	Montgomery	Sept. 19, noon.	Paving, any suitable material, grad., curb, etc. Madison ave.	Robert Tait, City Treasurer.
Ohio	Batavia	Sept. 19, noon.	Repairing the Ohio Turnpike, 2 contracts	J. L. Larkin, County Auditor.
Kansas	Junction City	Sept. 20, 3 p.m.	Macadamizing, filling, curbing, guttering, West Fifth st.	W. F. Muenzenmayer, Mayor.
Oklahoma	Norman	Sept. 20, 6 p.m.	Paving, curbing, etc., various sts., 2 contracts	A. R. Clement, City Clerk.
New Jersey	Newark	Sept. 20, 3.45 p.m.	Furn. and delivering 13,000 cu. yds. earth or ash fill on field	Sec'y. Board of Education.
Ohio	Bellaire	Sept. 24, noon.	Furnishing stone ready for crusher on pikes in Pultney Twp.	John P. Lowman, Clk. Pultney Twp
SEWERAGE				
Illinois	Chicago	Sept. 9, 11 a.m.	Constructing drains in various streets	C. A. V. Standish, Sec'y. B.Loc.Im
Iowa	Anamosa	Sept. 12, 7:30 p.m.	Bldg. sanitary sewer in Garnavillo st.	L. J. Fisher, City Clerk.
Pennsylvania	Carnegie	Sept. 12, 7:30 p.m.	Bldg. 8-in. sanitary sewer in portion of Fifth ave.	M. M. Everly, Chm. St. Com.
North Dakota	Fargo	Sept. 12, 5 p.m.	Constructing sewers, 3 contracts	E. R. Orchard, City Auditor.
South Dakota	Aberdeen	Sept. 12, 8 p.m.	Constructing sewers	F. W. Raymond, City Auditor.
New York	Binghamton	Sept. 14	Constructing the Mill Street sewer, paving, etc.	Bd. Contract and Supply.
Iowa	Essex	Sept. 14, 8 p.m.	Bldg. 5,326 ft., 12-in. sanitary sewer and 7 manholes	Frank P. Rotton, City Recorder.
Ohio	Lancaster	Sept. 14, noon.	Bldg. 24-in. sewer in 3 sts., ending at Hocking river	R. F. Brown, Dir. Pub. Serv.
Ohio	Oberlin	Sept. 25, noon.	Constructing a sewer in Hollywood st.	H. T. Marsh, Village Clerk.
WATER SUPPLY				
Illinois	Chicago	Sept. 10, 11 a.m.	Bldg. water service pipes in S. Loomis st. and W. North ave.	A. F. Keeney, Pres. Bd. Loc. Imp.
North Dakota	Fargo	Sept. 12, 5 p.m.	Constructing 6-in. water mains	E. R. Orchard, City Auditor.
Illinois	Beecher	Sept. 12, 8 p.m.	Bldg. pumping station, installing pumps, compressors, engines, tanks, machinery etc.; J. E. Pickens, Engr., Kankakee	W. F. Myrick, Village Clerk.
Kansas	Russell	Sept. 16, 3 p.m.	Bldg. water works light system; Burns & McDonnell, Engrs.	James R. Freed, Mayor.
New York	Roslyn	Sept. 19, 11 a.m.	Furn. 1,600 tons c. i. pipe, 40 tons specials, 125 fire hydrants, 148 valves and boxes, brick and concrete pumping station, 2 triplex pumps, 2 50 h. p. gas engines with gas producers, lay 14 miles pipe; Walter E. Sexton, Engineer, Mineola	J. F. Remson, Chm. Water Bd.
BRIDGES				
Massachusetts	Lowell	Sept. 10	Bldg. Billerica street bridge	Engrs. B. & M. R. R. Co.
Pennsylvania	Pittsburg	Sept. 12, noon.	Repairing floors of various County bridges	R. J. Cunningham, Co. Auditor.
Ohio	Delaware	Sept. 17	Bldg. approach and fill for Utley bridge	W. H. Bodurtha, County Auditor.
Ohio	Lisbon	Sept. 19, noon.	Bldg. rein. concrete skew arch to replace bridge No. 40, near pump station at E. Palestine, replanking Walnut st. bridge	C. H. Coburn, County Auditor.
LIGHTING AND POWER				
Ohio	North Baltimore	Sept. 9, noon.	Lighting sts., alleys and public places for 5, 10 or 15 years	J. W. Deter, City Clerk.
Nebraska	Omaha	Sept. 24, noon.	Installing elec. wire and conduits for power and light, also telephone conduits for County Court House	D. M. Haverly, County Clerk.
MISCELLANEOUS				
Massachusetts	Lowell	Sept. 10, 10 a.m.	Furnishing auto police patrol	Purchasing Agent.
Ohio	Cincinnati	Sept. 14, noon.	Installing 4 new boilers, etc., remove old boilers, City Hall	John. J. Wenner, Clk. Dir. Pub. Serv
New York	Buffalo	Sept. 15, 11 a.m.	Heating, ventilating, etc., repairs, etc., Ernest Wende Hosp.	F. G. Ward, Comr. Pub. Wks.
Florida	Tampa	Sept. 15	Furn. 50 uniforms and helmets	W. J. Barritt, Chm. Police Com.
New York	New York	Oct. 27	Bldg. new subways, 41 miles of trackage; cost $125,000,000; two plans, one by private capital other with city money.	Public Service Commissioner

BIDS RECEIVED

Provo City, Utah.—Water Works Aqueduct: P. J. Moran, $49,779.80; Holdaway Loan & Trust Co., $50,005.23; James Kennedy Cons. Co., $57,592.60; Tibbey, Jordan & Forbes, $57,960.83; McKay & Reed, $60,686.10; Strange & Maguire, $63,488.75; J. A. Lynch & Co., $70,239.10; Wheelwright Cons. Co., $71,542.85; The bid of P. J. Moran is as follows: Exc. and backfilling, 12,225 cu. yds. earth, 60c.; 2,396 cu. yds. gravel and boulders, 80c.; 100 cu. yds. solid rock, $3; embankment, 794 cu. yds., 35c.; tunneling, 1,450 lin. ft., $4.14; aqueduct, 17,656 lin. ft. std. sect., $1.80; 330 lin. ft. spl. sect., $1.91; 200 lin. ft. rip rap, $2; 18 manholes, ea., $30; gate house, $596. Supply Mains—Wire Wound Pipe: Wheelwright Cons. Co., $50,390.47; J. A. Lynch & Co., $52,291.33; Strange & Maguire, $55,468.07; P. J. Moran, $56,367.53; James Kennedy Cons. Co., $57,844.95; McKay & Reed, $62,385.67; Tibbey, Jordan & Forbes, $62,503.70; The bid of Wheelwright Cons. Co. is as follows: Exc. and backfilling, 19,314 cu. yds. earth, 50c.; 2,000 cu. yds. gravel and boulders, 60c.; solid rock, $4.75 per cu. yd. Wire Wound Pipe: 14-in. (250 ft. hd.), 960 lin. ft., $1.20; 16-in., 1,920 lin. ft., $1.50; 18-in., 3,360 lin. ft., $1.65; 20-in., 2,880 lin. ft., $1.85; 21-in., (0 to 250 ft. hd.), 808 lin. ft., $1.75; 24-in., 6,982 lin. ft., $2; special castings, 19,465 lbs., .655c. Cast Iron Pipe: 8-in., 96 lin. ft., $1.10; 12-in., 1,440 lin. ft., $2; special castings, 13,000 lbs., .055c.; hydrants, $50 each. Valves—2 8-in., $25.50 each; 3 12-in., $35.80; 2 14-in., $70; 4 16-in., $90; 7 18-in., $125; 6 20-in., $140; 1 22-in., $185; 3 24-in., $265; 27 valve boxes, $6.50 each.—E. A. Jacob, City Engineer; Louis C. Kelsey, 402 Dooly Bldg., Salt Lake City, Consulting Engineer.

LIGHTING AND POWER

New Britain, Conn.—New Britain Gas Light Co. is making preparations to extend gas mains to Maple Hill.

Glassboro, N. J.—Gloucester County Electric Co. has made application for 50-year franchise for lighting and it will be considered at next meeting of Township Committee.

FIRE EQUIPMENT

Denver, Col.—Harkness Heights has asked for installation of fire alarm boxes.

St. Petersburg, Fla.—Citizens have voted $7,500 bonds for fire station, jail and police alarm system.

Evansville, Ind.—Yearly budget includes following appropriations: additional apparatus, $7,500; hose $2,000; fire alarm boxes, $250 and repair of apparatus, $1,500.

Fenton, Ia.—City is considering purchase of hose cart.

Orange, N. J.—Board of Fire Commissioners will consider purchase of hose in near future.

Perth Amboy, N. J.—Board of Aldermen is considering purchase of auto hose and chemical wagon; cost $6,000; machine at Morristown will be inspected.

Trenton, N. J.—Bids will be received Sept. 15, noon, for $5,000 fire and police telegraph and telephone bonds.—H. E. Evans, City Treasurer.

CONTRACT AWARDED

Omaha, Neb.—Fire and Police Board has decided to buy Stearns automobile for Chief Salter of fire department; cost, $3,339.

BRIDGES

Reading, Pa.—Board of Trade is advocating erection of concrete bridge across Schuylkill River.

CONTRACTS AWARDED

Fort Dodge, Ia.—Erection of South Third st. viaduct to Indiana Bridge Co.

Baltimore, Md.—Concrete bridge to be erected across Jones' Falls at Pratt st. to D. V. Ault, $87,810; work to be completed in 150 days.

MISCELLANEOUS

St. Petersburg, Fla.—Citizens have voted bonds to acquire water front lands held in trust and $7,500 bonds for jail and fire station and police alarm system.

Rock Island, Ill.—City desires auto police patrol and ambulance.

Evansville, Ind.—Yearly budget includes $3,500 appropriation for new equipment for Police Department.

Duluth, Minn.—Conference Committee is favorable to proposed municipal dock system.

Trenton, N. J.—Bids will be received Sept. 15, noon, for $50,000 harbor bonds.—H. E. Evans, City Treasurer.

Newburgh, N. Y.—Board of Park Commissioners has decided to request appropriation of $7,500 for park purposes.

Saranac Lake, N. Y.—Site has been selected for proposed garbage incinerator.

Amherstburg, Wis.—Residents are urging building of public dock on river, either by Canadian or city government.

Milwaukee, Wis.—Committee on Streets and Alleys has decided to install 1,300 new street signs at street intersections.